APPENDIX 4 PHASE ONE ENVIRONMENTAL SITE ASSESSMENT PORTLAND CEMENT WORKS



FINAL REPORT

Phase 1 Environmental Site Assessment Portland Cement Works

Prepared for

Blue Circle Southern Cement Pty Ltd

Level 39, AMP Centre 50 Bridge Street Sydney NSW 2000

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43177139



Project Manager:

id Ball

Nick Ballard Senior Environmental Scientist

Project Director:

Peer Review:

Non Br

Will Barrett Associate Environmental Scientist

Jenny MacMahon Principal

Tom Onus Environmental Scientist

URS Australia Pty Ltd Level 4, 407 Pacific Highway Artarmon NSW 2064 Australia

T: 61 2 8925 5500 F: 61 2 8925 5555

Date:	
Reference:	
Status:	

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Author:



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Executive Summary

URS Australia Pty Ltd (URS) was engaged by Blue Circle Southern Cement Pty Ltd (Boral) to conduct a Phase 1 Environmental Site Assessment (Phase 1 ESA) of the former quarry and cement plant, located in the town of Portland, NSW. URS understands that the Phase 1 ESA was required as part of the proposed residential and commercial redevelopment of the site.

The Phase 1 ESA is based on a desktop review of third party, available site and historic environmental records, a site walkover reconnaissance and interviews with site representatives. Sampling of an ash stockpile located behind the residential buildings on the northern side of Williwa Street was also conducted.

The site is part of a former quarry and cement works that has been operated by Boral and predecessors since the 1800s. The site consists of a 10.5 hectare area in the southern portion of the former quarry and cement works. The site is covered by buildings, with the remaining areas consisting of paved areas, vacant land and a site screen created from ash material.

The facility originally included two boiler houses and the power house, cement kilns, crushers, storage facilities for coal, clinker and cement, a locomotive shed, workshops and offices. The plant area was served by a rail network entering from the east. Some of these buildings have now been demolished. The remaining buildings include the powerhouse building and stack, boiler house, a stores building, the bagging plant building, locomotive shed, weighbridge, main office block, bath house, casino, casualty block, a number of workshops, annex building and a group of cement silos. There is row of residential buildings along the northern side of Williwa Street, known as the Williwa Street cottages, that are owned by Boral.

The site is predominately level, with a slight slope to the north towards the quarries. The nearest identified surface water body to the site, and the destination of surface water drainage from the site and surrounding area, is Quarry 3 located directly to the north. The groundwater flow is likely to be in the same direction.

Site Activities

The site is no longer in operation, cement production having ceased in 1991 and quarrying in 1996.

Site History

The site appears to have been owned by various companies for quarrying and cement production since 1832. Cement production commenced in 1887 and continued until 1991. The production of cement commenced in 1887 and ceased in 1991.

SOIL AND GROUNDWATER CONTAMINATION ISSUES

Previous environmental investigations conducted on site, and on the quarry as a whole, have identified the presence of contamination. Ash material from the former boilers has been spread across large areas of the site and as a screen behind the residential properties along Williwa Street. Water in Quarries 1 and 2 to the north of the site contains hexavalent chromium (0.06 to 0.08 mg/L) and has a pH of up to 10. Surface soil samples collected around the residential buildings along the northern side of Williwa Street contained concentrations of some metals detected above threshold concentrations.

Coffey Geosciences Pty Ltd prepared a remediation and validation plan (RVP) in 2004 for a proposed residential subdivision of cottages on the northern side of Williwa Street. The RVP addressed concentrations of metals in the surface soil that exceeded threshold concentrations, and presented an approach and methodology for site remediation and validation.



Executive Summary

A limited stockpile characterisation of ash material located on the northern side of the residential buildings on Williwa Street indicated that the material contained polycyclic aromatic hydrocarbons (PAH) concentrations below the limits of reporting (LOR) and inorganics concentrations below the adopted guidelines. The analytical results were consistent with those from previous investigations of ash material generated on site.

Potential current and historical on-site sources of soil/groundwater contamination identified during the site inspection include two underground storage tanks (USTs), one above ground storage tank (AST), two (2) former oils storage sumps, a former maintenance pit, old batteries, a bunded drum storage area, one (1) current and four (4) former transformers.

Potential sources of offsite soil/groundwater contamination identified during the site inspection include the BP service station located on Williwa Street to the south of the site and the Integral Energy substation located on Saville Street to the south of the site.

Asbestos containing materials (ACM) are thought to be present in the roof of the former workshop and locomotive shed, and in the residential buildings. Polychlorinated biphenyls (PCBs) may be present in the transformer on site. Four (4) former transformers were also stored onsite in a vacant area to the west of the power house building.

OPERATIONAL COMPLIANCE & OTHER LIABILITY ISSUES

No issues were identified that have the potential to be significant non-compliance issues with respect to environmental regulatory requirements.



Introduction

Section 1

1.1 Background

URS Australia Pty Ltd (URS) was engaged by Blue Circle Southern Cement Pty Ltd (Boral) to conduct a Phase 1 Environmental Site Assessment (Phase 1 ESA) of the former quarry and cement plant, located in the town of Portland, NSW (**Figure 1**). URS understands that the Phase 1 ESA is required as part of proposed residential and commercial redevelopment of the site.

The former quarry and cement plant cover an area of approximately 84 hectares. A 10.5 hectare area in the southern portion of the former quarry and cement works is the subject of this Phase 1 ESA (the site) (**Figure 2**). The site is covered by buildings, with the remaining areas consisting of paved areas, vacant land and a site screen created from ash material. The buildings consist of St Stephen's Anglican Church, church hall, residential buildings, powerhouse building and stack, boiler house, a stores building, the bagging plant building, locomotive shed, weighbridge office, main office block, bath house, casino, casualty block, a number of workshops, annex building and a group of cement silos.

The quarry was operated by Boral and predecessors since the 1800s, ceasing in 1996. The production of cement commenced in 1887 and ceased in 1991.

1.2 Objectives

The objectives of the Phase 1 ESA were to identify:

- Potential sources of soil and groundwater contamination at the site; and
- Significant non-compliance issues with environmental regulatory requirements.

Soil and groundwater contamination and significant non-compliance issues may be associated with historical or current site operations and may be the result of:

- Soil and groundwater contamination due to past and current uses of the site and surrounding land, in the context of the site's environmental setting and environmental sensitivity;
- The presence of hazardous substances on-site including redundant chemicals, asbestos and polychlorinated biphenyls (PCBs);
- Activities on and off-site which may have resulted in significant contamination by hazardous materials or wastes; and
- Current operations undertaken in potential non-compliance with environmental legislative requirements.

1.3 Scope of Work

The scope of work undertaken by URS to address the objectives consisted of the following components:

- A data review on the history of the site including a review of selected aerial photographs and Certificates of Title;
- Searches for information held by relevant State authorities in relation to contaminated land;
- Obtaining information pertaining to the site's environmental setting including the proximity of the site to sensitive receptors and information on site geology and hydrogeology;
- Inspection of the site and immediate surrounds to support the results of the data review and to identify site characteristics that may be suggestive of land contamination; and



Introduction

 Preparation of this factual report detailing the Phase 1 ESA findings in accordance with the NSW Environment Protection Authority (EPA, now incorporated into the Department of Environment and Climate Change [DECC]) publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (EPA, November 1997).

Intrusive Phase 2 investigations involving material, soil or groundwater sampling were not conducted as part of this Phase 1 ESA.

1.3.1 Records Review

The following records were reviewed:

- Third Party Records:
 - Current and historical Certificates of Title to provide a history of ownership and land use;
 - Selected aerial photographs of the site from the years 1953 to 2006 to provide evidence of the history of development of the site and indications of potential sources of contamination;
 - Advice from the New South Wales Environment Protection Authority (NSW EPA), for information on notices issued by the EPA or others;
 - Planning Certificates issued under Section 149(2) & (5) of the Environmental Planning and Assessment Act 1979;
 - Details of groundwater bores registered on the Department of Natural Resources (DNR) groundwater bore database and located within 1.0 kilometre of the site; and
 - Relevant topographical and geological maps of the area.
- Site Records:
 - Annual Environmental Management Report, Review for 2003; and
 - Annual Environmental Management Report, Review for 2004.

1.3.2 Site Inspection

A site inspection was undertaken by URS on 31 October 2008 to provide further information of potential sources of soil/groundwater contamination and areas of significant environmental non-compliance.

A "drive-by" inspection of neighbouring properties was also conducted to identify the presence and proximity of sensitive receptors which could be significantly impacted upon by the site, and off-site operations which could have a significant negative impact on the site.

1.3.3 Interviews

Discussions were held by URS with Mr. David Edmiston (General Manager's delegate for Boral Limited).

1.4 Personnel

The site visit was conducted on 31 October 2008 by Mr. Tom Onus, Environmental Scientist, URS. The site representative (Mr. David Edmiston) was present during the site inspection.

Site Description

Section 2

2.1 Site Location and Ownership

The site is located in the town of Portland, NSW, as shown in **Figure 1**. It consists of a 10.5 hectare area in the southern portion of the former quarry and cement works (**Figure 2**). The site contains buildings and infrastructure related to the former quarry and cement works and residential buildings along the northern side of Williwa Street, known as the Williwa Street cottages (**Figure 3**).

A search of the Certificate of Title Search by Ausearch Pty Ltd dated 24 and 28 October 2008 identified the site as:

- part of Lot 53 in Deposited Plan (DP) 755769;
- part of Lot 1 in DP1130700;
- Lot 1 in DP109592;
- Lot 1 in DP115461 (church hall);
- Lot 1 in DP922029 (part Anglican church); and
- Lot 1 in DP923398 (part Anglican church).

The site is located at Portland, in the Local Government Area of Lithgow City, Parish of Cullen Bullen, County of Roxburgh.

The Registered Proprietors (owner) according to the current Certificates of Title are:

- Volume 1 Folio 109592 and Volume 5461 Folio 163 is Blue Circle Southern Cement Limited; and
- Volume 1 Folio 115461 and Volume 1478 Folio 45 is Anglican Church Property Trust Diocese of Sydney.

The Title also identifies a portion of land Lot 1 in DP1130700 resumed for the purposes of a pumping station pursuant to notification in Government Gazette dated 7 October 1960.

The Certificate of Title Search by Ausearch Pty Ltd is in Appendix A.

2.2 Planning Certificates

Planning Certificates issued under Section 149(2) & (5) of the Environmental Planning and Assessment Act 1979 by Lithgow City Council on 30 October 2008 indicates the following:

- The land is zoned as 'Zone No. 2(V) Village' under the Lithgow City Local Environmental Plan 1994.
- The land is not affected by a policy adopted by the council that restricts the development of the land because of the likelihood of landslip, subsidence, bushfire, acid sulphate soils or any other risk.
- The land is not affected by matters arising under the Contaminated Land Management Act 1997.
- The property retains a heritage item as listed under LEP 1994.

No other information in relation to land contamination is presented in the Planning Certificate.

A copy of the Certificate is included in Appendix B.



Site Description

2.3 Surrounding Land Use

The site is located in the township of Portland. Adjacent properties are detailed in the following.

North	The remainder of the former quarry and cement works, including water filled quarries and vacant land, beyond which are rural residential properties.
South	Williwa Street and commercial properties, including a BP service station, cafes, bakery and pub, an oval, public swimming pool and an Integral Energy substation.
East	Residential properties and a school
West	Residential properties and the Portland Showground.

The adjacent properties were not accessed for inspection. Based on visual observation from the site the following features on the adjacent land had potential to result in contamination of the site:

- The electrical substation owned by Integral Energy; and
- The BP service station.

It should also be noted that the water contained in Quarries 1 and 2 is basic (pH ranges up to 10) and contains hexavalent chromium (URS, 2003).

2.4 Site Layout and Infrastructure

The cement works originally included two boiler houses and the power house, cement kilns, crushers, storage facilities for coal, clinker and cement, a locomotive shed, workshops and offices. The plant area was served by a rail network entering from the east. Some of these buildings have now been demolished. The remaining buildings include the powerhouse building and stack, boiler house, a stores building, the bagging plant building, locomotive shed, weighbridge, main office block, bath house, casino, casualty block, a number of workshops, annex building and a group of cement silos. A row of residential buildings owned by Boral located along the northern side of Williwa Street (the Williwa Street cottages) were included in the Phase 1 ESA.

St Stephen's Anglican Church and the adjacent church hall are located at the western end of Williwa Street. They were previously owned by Boral (or its predecessor) and were included in the Phase 1 ESA.

2.5 Site Operations and Process Description

The site is no longer in operation, having closed in 1996. Prior to its closure, the site was used by Portland Cement Works for the batching of cement.

2.6 Environmental Setting

The physical setting and environmental characteristics of the subject property are based on the URS site reconnaissance and obtained from the following sources:

- Portland Cement Works Close Plan (URS, 2008); and
- Central Mapping Authority of NSW, 1989 'Portland 8831-2-N Topographic Map 1:20,000 Second Edition'.



Site Description

Section 2

2.6.1 Topography and Drainage

The Central Mapping Authority of NSW gives the elevation of the site as approximately 920 metres Australian Height Datum (AHD). The site is predominately level, with a slight slope to the north towards the quarries.

2.6.2 Site Geology

The bedrock geology of the site, as described in the *NSW Geological Survey* (1962), is Devonian limestone. The limestone is an isolated block surrounded by cemented conglomerates, mudstones and shales. The boundaries are faulted to the north and south.

2.6.3 Site Hydrology

The nearest identified surface water body to the site, and the destination of surface water drainage from the site and surrounding area, is Quarry 3 is located directly to the north (**Figure 2**). The groundwater flow is likely to be in the same direction.

Other nearby surface water bodies include Quarries 1, 2 and 4, the Hot Water Dam, Williwa Creek, Dulhuntys Creek and Limestone Creek.

Quarries 1 and 2 are located to the west of the site. Quarries 3 and 4, and the Hot Water Dam are located to the north of the site.

Williwa Creek flows northwards in a valley about 1.5 kilometres further west. Dulhuntys Creek flows northwards in a parallel valley about 1.5 kilometre to the east of the site.

The Quarry and the catchment to the south, including Portland town, is drained by Limestone Creek which joins Williwa Creek about one kilometre to the north of the site. Prior to quarrying operations, it is likely that Limestone Creek drained across the centre of the site. As part of the site rehabilitation works the original drainage pattern has been re-established. Most of the storm water flow from Quarries 1 and 2 has been diverted through the site to Limestone Creek via Quarry 3.

Registered Groundwater Use

A search for registered groundwater uses located within a 1.0 kilometre radius of the site was undertaken using the NSW Government Department of Natural Resources internet database (**Appendix C**). Four (4) registered groundwater bores were registered within the area. Details of the groundwater bores are provided in **Table 2-1** below.

Well ID	Co-ordinate	Use	Depth (mbgl)	Yield (L/sec)	TDS (mg/L)
GW053598	33 21' 4" 149 58' 36"	Industrial	60	Unknown	Unknown
GW056349	33 21' 32" 149 58'42"	Domestic	36.6	Unknown	Unknown
GW003756	33 21' 9" 149 58' 1"	Public/Municipal	55.2	2.37	Unknown
GW057387	33 21' 32" 149 58' 20"	Domestic Stock	45.7	0.13	Not known

Table 2-1 Registered Groundwater Bores Within 1.0 km of Site



Section 2 Site Description

2.6.4 Other Sensitive Receptors

The majority of activities around the site are residential. The nearest residential properties are located adjacent to the site to the east, south and west. There is a school adjacent to the site to the east.

2.7 Site History

A review of the site history was undertaken to determine the historical use of the site, and in particular to identify activities with the potential to contaminate soil and/or groundwater at the site.

The history of the site and adjacent properties was compiled through the review of documents and information from Boral and the following sources:

- The NSW Government Department of Lands aerial photographs;
- Ausearch Pty Ltd historical certificates of title;
- Portland Cement Works Closure Plan 2008 prepared by URS;
- Annual Environmental Management Report, Portland Site, Review for 2003 prepared by Boral; and
- Annual Environmental Management Report, Portland Site, Review for 2004 prepared by Boral

2.7.1 Historical Aerial Photographs

Aerial photographs taken between 1953 and 2006 were obtained from the NSW Government Department of Lands. Photographs were reviewed to assess the history of development of the site. The review of the aerial photographs is summarised in **Table 2-2** below.

Date		Register	Activity
March 1953 B&W image	Project: Run: Film: Photo: Scale:	Bathurst 4 568 44 1:15,500	The site includes all of the present day structures as described in Section 2.4, which the exception of the concrete silos, diesel AST and adjacent workshop. Structures no longer present on site are evident in the photograph to the north of the powerhouse and boiler house, and to the east of the main office block. Four small structures (presumed to be residential buildings) are also present on Williwa Street to the east of the church hall. The railway network entering the site from the east is present. On the Quarry site, the hot water dam and Quarries 1, 2 and 3 are evident. The surrounding area has largely been developed with residential
January 1964 B&W image	Project: Run: Film: Photo: Scale:	Bathurst 8 1198 5138 1:17,500	properties. The site and surrounding area are largely unchanged. Excavation of Quarry 4 has started.
November 1972 B&W image	Project: Run: Film: Photo: Scale:	Bathurst 1B 2110 5061 1:24,500	The site and surrounding area appear to be largely unchanged. (however the aerial photograph is of low resolution). Quarries 1, 2 and 3 contain water.

Table 2-2 Historical Aerial Photograph Review



Site Description

Section 2

Date	Register	Activity
October 1989 Colour image	Project: Bathurst Run: 10 Film: 3692 Photo: 106 Scale: 1:25,000	The cement silos and workshop appear to be present on site. The electrical substation to the south of the site is present.
July 1998 Colour image	Project: Bathurst Run: 10 Film: 1 Photo: 24 Scale: 1:25,000	The structures to the east of the main office block and most of those to the north of the powerhouse and boiler house are no longer present on site. The railway network appears to no longer be present.
March 2006 Colour image	Project: Portland Run: 3 Film: 14 Photo: 16 Scale: 1:16,000	The four residential buildings on Williwa Street, to the east of the church hall, and the remainder of the buildings to the north of the powerhouse and boiler house are no longer present. The diesel AST is present on site.

2.7.2 Historical Certificates of Title

The current and historical Certificates of Title were obtained from Ausearch Pty Ltd, and reviewed to assess the history of ownership and therefore, possible land use of the site (**Appendix A**).

The site is currently described as part of Lot 53 in Deposited Plan 755769, part of Lot 1 in DP1130700, Lot 1 in DP109592, Lot 1 in DP115461 (church hall), Lot 1 in DP922029 (part Anglican church) and Lot 1 in DP923398 (part Anglican church). The site is located at Portland, in the Local Government Area of Lithgow City, Parish of Cullen Bullen, County of Roxburgh.

The Registered Proprietors (owner) according to the current Certificates of Title are Blue Circle Southern Cement Limited and Anglican Church Property Trust Diocese of Sydney (church and church hall).

The Title also identifies a portion of land Lot 1 in DP1130700 resumed for the purposes of a pumping station pursuant to notification in Government Gazette dated 7 October 1960.

The history of the ownership based on the historical Certificates of Title is summarised in Table 2-3.

	Proprietor	Certificate of Title	Derived from Parent Title	Period of Ownership
A	The Cullen Bullen Lime and Marble Works Company Limited Later The Cullen Bullen Lime & Cement Company Limited	Vol 860 Folio 73		1887 to 1898 (B)
В	George Raffan			1898 to unknown (C)
С	The Commonwealth Portland Cement Company Limited			unknown to 1902 (D) to 1903 (G)
D	The Law Guarantee and Trust Society Limited	Vol 1411 Folio 128 Vol 1482 Folio 248	Vol 860 Folio 73	1902 to 12/9/1912 (E)
E	William Thomas Dodds and Frank Lay	Vol 1482 Folio 248		12/9/1912 to 4/3/1915 (F)

Table 2-3 Historical Certificates of Title



Site Description

	Proprietor	Certificate of Title	Derived from Parent Title	Period of Ownership
F	Commonwealth Portland Cement Company Limited	Vol 1482 Folio 248 Vol 2672 Folio 67 Vol 5461 Folio 163	Vol 1482 Folio 248	4/3/1915 to 6/5/1916 (G) to 12/4/1944 (H) to 6/11/1989 (K)
G	The Church of England Property Trust Diocese of Sydney and The Church of England Property Trust Diocese of Bathurst now Anglican Church Property Trust Diocese of Sydney	Vol 1473 Folio 45 Vol 2663 Folio 107	Vol 1411 Folio 128 Vol 860 Folio 73 Vol 1482 Folio 248	from 1903 from 6/5/1916 to date
Н	The Commonwealth of Australia	Vol 5437 Folio 28	Vol 2672 Folio 67	12/4/1944 to 1/8/1974 (I)
Ι	The Commonwealth Portland Cement Company Limited			1/8/1974 to 6/11/1989 (J)
J	Blue Circle Southern Cement Limited	Vol 5437 Folio 28		6/11/1989 to date
К	Blue Circle Southern Cement Limited	Vol 5461 Folio 163		6/11/1989 to date

2.7.3 Document Review

A review of the *Portland Cement Works Closure Plan 2008* prepared by URS (2008) and the 2003 and 2004 *Annual Environmental Management Report, Portland Site* prepared by Boral has provided the following information regarding the history of the site.

Quarrying at the site began in 1832. On-site burning of limestone began in 1869 and cement was first produced in 1887. The production of cement continued until 1991. Commercial limestone quarrying ceased in 1996.

The former cement factory buildings originally included two boiler houses and the power house, cement kilns, crushers, storage facilities for coal, clinker and cement, a locomotive shed, workshops and offices. The plant area was served by a rail network entering from the east. Some of these buildings have now been demolished.

Early quarry and cement plant operations were powered by coal burning power stations situated in the cement plant area. The ash generated from the boilers was placed around the quarry and as a screen behind the residential properties along Williwa Street.

A rehabilitation programme for the site was drafted in 1995. The rehabilitation of the cement works involved the demolition and removal of the bulk of the cement making plant and the clearing of the site. Some buildings of historical significance and some other structures that have a potential for use in future commercial or residential developments were left standing.

Previous environmental investigations have been conducted at the site and the quarry as a whole, details of which are provided in Section 2.9.

2.7.4 Other Available Historical Site Information

No other historical information relating to the site was available.



Site Description

Section 2

2.8 EPA Contaminated Sites Database

A search of the NSW EPA (now incorporated in the DECC) public register of Notices issued under the Contaminated Land Management Act 1997 on 22 October 2008 indicated that there were no current and two (2) former notices relating to the site. Blue Circle Southern Cement Ltd was issued an Investigation Order by the EPA on 17 August 1995. A Revocation Notice was issued by the EPA on 6 October 1999.

The search results of the NSW EPA public register of Notices is included in Appendix D.

2.9 Previous Environmental Investigations

Previous environmental investigations conducted on site, and on the quarry as a whole, are summarised below. It should be noted that the density of soil sampling for the site as a whole, and for the factory area in particular, is low relative to current guidelines for detailed site characterisation. Consequently, additional soil sampling may become necessary if parts of the land are to be rezoned for more sensitive land uses.

Dames & Moore, 1994

The first assessment of surface water quality was conducted by Dames & Moore in 1994 and comprised a program of depth sampling in Quarries 1 and 2 and analysis for conductivity, pH and chromium. This study found that hexavalent chromium was present in the quarry waters at concentrations in the range 0.06 to 0.08 mg/L and showed no indication of vertical stratification in water salinity, pH or chromium concentrations.

Dames & Moore, 1995b

The report prepared by Dames & Moore (1995), *Ash Pile Sampling at Blue Southern Cement Portland Works*, was available in the URS library. The report details the excavation and sampling of 10 test pits in a fly ash pile on the northern side of Quarry 1 at the Portland Quarry. The works were carried out as part of on-going rehabilitation of Portland Quarry. Boral proposed to dispose of the fly ash pile into Quarries 1 and 2.

The results of organic analyses of the ash samples did not contain total petroleum hydrocarbons (TPHs) or polycyclic aromatic hydrocarbons (PAHs) above the laboratories limits of reporting (LOR). The main inorganic element in the ash was calcium, with subsidiary magnesium, potassium and sodium. Concentrations of copper, lead and zinc were elevated with respect to Australian average background levels in soil.

Dames & Moore, 1996a

Dames & Moore conducted a contamination assessment of the Portland site in 1995 in response to a Section 35 Order under the EHC Act issued by the NSW EPA. The investigation work comprised:

- A hydrographic survey and water level monitoring of the quarries;
- Sediment sampling and surface water sampling in the quarries;
- Installation of six (6) deep groundwater monitoring wells; and
- Limited soil sampling focussing on ash dumps and the former cement factory area.



Site Description

The key conclusions of the assessment in respect of surface water were that:

- Water in Quarries 1 and 2 contained elevated concentrations of Cr(III) and Cr(VI). However, Cr(III) concentrations in all the other water bodies, including the Bottle Kiln Pond were low. A potential for periodic outflows of contaminated water from Quarries 1 and 2 through the abandoned shaft to Limestone Creek was identified; and
- Based on historical information, sources of chromium in Quarries 1 and 2 were identified as materials including chromium refractory bricks and kiln dusts disposed of at the north end of Quarry 2.

Dames & Moore excavated 10 test pits and drilled three (3) auger holes to make a preliminary assessment of soil contamination across the remainder of the site in September 1995. The test pits and auger holes were targeted in areas of potential contamination within the factory area including a waste oil store, an underground fuel storage tank and the former locomotive shed. Fly ash and kiln dust mixed with clay, gravel and rock fragments was encountered in all the test pits in the ash dump area. Coal fragments and ash occurred near the surface in all three (3) test pits excavated in the cement plant area. The soils in the auger holes appeared visually uncontaminated and no organic vapours were detected in any of the three (3) holes. Based on field screening, no soil samples were retained or analysed from the auger holes.

The soil samples were analysed for petroleum hydrocarbons, metals and asbestos. Environmental guidelines for recreational land use were not exceeded in the majority of samples. Concentrations of copper and chromium slightly exceeded the guidelines in some ash samples.

Dames & Moore drilled, installed and sampled six (6) groundwater monitoring wells on the site in 1995. The conclusions of the site groundwater assessment were that chromium and hexavalent chromium were either not detected, or otherwise detected at low concentrations in the groundwater at all locations including those in the vicinity of Quarries 1 and 2. This is assessed to be due to limited groundwater losses from Quarries 1 and 2, combined with attenuation and absorption of chromium on clays, organic matter and/or iron oxides in the aquifer. There were no indications of significant on-site or off-site groundwater contamination due to quarry activities.

Ongoing Surface Water Monitoring

Following the surface water quality investigations carried out by Dames & Moore in 1994 and 1996a, periodic monitoring of the quarries has been conducted.

Samples have generally been taken from Quarries 1, 2, 3 and 4, the hot water dam, the bottle kiln pond and the site boundary on Limestone Creek. The analytes have varied from point to point and have included pH, conductivity, trivalent chromium, hexavalent chromium, copper, lead, zinc and major ions (calcium, magnesium, potassium, chloride, sulphate and carbonate/bicarbonate). Most of the analytical results show large fluctuations in the period 1997/98. This was due to variability in the sampling procedures and laboratories and the data from that period may not be reliable.

The following surface water sampling results were available for review:

- Water Sampling in Quarries at BCSC Portland Works, Dames & Moore, 1994
- Assessment of Bottle Kiln Water Quality at Portland Quarry, Dames & Moore, 1995a
- Contamination Assessment and Conceptual Remediation Plan, Blue Circle Southern Cement Portland Works, Dames & Moore, 1996a

Site Description

Section 2

- May 2002 Monitoring Round of Portland Quarry, URS, 2002
- April 2003 Monitoring Round of Portland Quarry, URS, 2003
- May 2004 Monitoring Round of Portland Quarry, URS 2004
- Annual Report, Surface Water Monitoring October 2006, HLA, 2007

Coffey 2002

Coffey Geosciences Pty Ltd conducted an ESA in 2002 for a proposed residential subdivision located at Williwa Street, Portland. The ESA was conducted in the area of residential buildings along the northern side of Williwa Street. It comprised the excavation of 15 test pits and drilling of 13 hand auger holes across the site, and analyses of the collected soil samples for a selection of metals, TPH, BTEX (comprised of benzene, toluene, ethylbenzene and xylenes), PAHs and asbestos.

Some metals were detected above the threshold concentrations (taken from the NSW EPA Auditor Guidelines). TPH, BTEX, PAHs and asbestos were not detected in the samples analysed. The report recommended that additional sampling and analysis be undertaken to assess the extent of heavy metal (particularly lead) in near surface soil and a remediation action plan (RAP) be prepared.

NBRS&P 2003

Noel Bell Ridley Smith & Partners Pty Ltd (NBRS&P) developed a conservation management plan as part of the Boral response to Conditions set by the Land and Environment Court of NSW relating to a Development Application for sub-division and development of portion of the former Portland Cement Works Site.

The conservation management plan was prepared for the cottages, fences and outbuildings located along the northern side of Williwa Street. It made seven (7) principal recommendations as to the management and proposed development of the site.

Coffey 2004

Coffey Geosciences Pty Ltd prepared a remediation and validation plan (RVP) in 2004 for a proposed residential subdivision located at Williwa Street, Portland. The RVP presented an approach and methodology for site remediation and validation.

2.10 Potential On-Site Sources of Soil/Groundwater Contamination (Current & Historical)

Potential current and historical on-site sources of soil/groundwater contamination identified during the site inspection include the following:

- Underground storage tanks (USTs) thought to be located on the southern side of the boiler house and on the northern side of the office;
- One above ground storage tank (AST) located near the workshops;
- Two former oil storage sumps in the boiler house workshop and loco shed east; and
- A bunded drum storage area located near the workshops.



Site Description

2.11 Potential Off-Site Sources of Soil/Groundwater Contamination (Current & Historical)

Potential sources of offsite soil/groundwater contamination identified during the site inspection include the following:

- Water in Quarries 1 and 2 to the north of the site contains low concentrations of chromium and has a pH of up to 10;
- The BP service station located on Williwa Street to the south of the site; and
- The Integral Energy substation located on Saville Street to the south of the site.



Site Reconnaissance

Section 3

URS conducted a visual reconnaissance of representative and readily accessible areas of the site on 31 October 2008. During the site inspection, URS spot-checked site operations and assessed compliance with environmental regulations and operating permits.

Mr. David Edmiston (General Manager's delegate for Boral Limited) was present during the site inspection activities.

3.1 Environmental Management

The site does not have an Environmental Management System to manage environmental issues. An Annual Environmental Management Report for the Portland Site was prepared by Boral for 2003. The report summarises the operations, environmental management and rehabilitation.

3.2 Permitting

The site does not currently hold any permits.

3.2.1 Dangerous Goods Notification

Dangerous goods stored and used on the site include the following:

- Engine oil volume unknown
- Diesel 10,000 litres (L)
- Small volumes of herbicides, chemicals for cleaning and paints

The above dangerous goods are used by Mark James, a civil contractor that rents one of the workshops and carries out site maintenance. No documentation from WorkCover relating to the storage of the above dangerous goods was made available to URS during the investigation.

The former contents and volume of the two disused USTs on-site are unknown. It is also unknown if the USTs have been decommissioned.

3.2.2 EPA Environment Protection Licensing

The facility is not operational and is therefore not required to hold any operating permits related to environmental emissions.

3.2.3 Trade Waste Agreement

The site does not hold a trade waste agreement.

3.2.4 Storage of Explosive Material

The company relinquished its license to store explosive material in 1999 following the closure of the quarry.

3.3 Air Emissions

No sources of air emissions were identified on the site.



Section 3 Site Reconnaissance

3.4 Materials Handling and Storage

3.4.1 Aboveground and Underground Storage Tanks

Diesel fuel is stored in a 10,000 L aboveground storage tank (AST) surrounded by a cement brick bund wall. The AST is located to the north of the workshops and is currently in use. The bund contained oil and water, which had stained the bund walls and floor. The oily water was leaking from the bund via an open valve and flowing across the concrete to a grassed area.

Two disused underground storage tanks (USTs) are located on site. Fill points or dip points for the USTs were located during the site inspection on the southern side of the boiler house and on the northern side of the office. No other infrastructure, such as bowsers or vents, were observed on site. The volume, age and former contents of the USTs are unknown.

The USTs remain in place and may not have been decommissioned in accordance with WorkCover dangerous goods regulations (removal of liquids and abandonment in accordance with AS 1940). Tank removal is recommended as best practice.

3.4.2 Other Chemical Use and Storage

Other significant issues associated with chemical use and storage noted during the site inspection include the following:

- Former workshop two (2) former oil storage sumps.
- Locomotive shed a former maintenance pit.
- Workshop the workshop at the western end is still used by the site rehabilitation contractor. The contractor was not present during the inspection and therefore the workshop was not inspected.
- Oil and grease is kept in a locked building adjacent to the workshop. This area could not be viewed during the site inspection as the contractor was not present. It is reported that an approved contractor removes all large quantities of waste oil from the site as required.
- The bunded drum storage area located near the workshop may be contaminated. It was observed to contain eleven 205 litre oil drums and two 20 litre drums. The bund was constructed of double brick and contained black oily water which had stained the bund walls and floor. The oily water was leaking from the western side of the bund. A number of 205 litre and 20 litre oil drums were observed adjacent to the drum storage area, near the diesel AST and inside the power house building. The soil around the drums in the power house building was stained with oil.
- Approximately 20 truck and car batteries were observed adjacent to the bunded drum storage area.
- A small volume of herbicides are stored and used on site for weed control.

3.5 Water Management

3.5.1 Water Supply and Use

Water is supplied to the site from the municipal water supply system. Site representatives reported that water is used for washing and cleaning purposes, and for sanitary and domestic purposes in bathrooms and kitchen areas.

Site Reconnaissance

Section 3

No significant issues associated with water supply or use were noted during the site assessment.

3.5.2 Wastewater Discharges

The site is not operational, and as such wastewater is not produced by the site. Prior to its closure, wastewater was recycled through the quarries.

Stormwater is directed to the stormwater drain which enters the site near the intersection of Williwa Street and Cullen Bullen Road and is thought to run to Quarry 3.

All sewerage is thought to go off-site to the Council operated sewerage treatment plant.

3.6 Waste Management

Waste generated by the tenant of the workshops is unknown as they were not present at the time of the site inspection, but is thought to include:

- General waste
- Waste oil
- Empty drums 205 L and 20 L
- Car and truck batteries
- Scrap metal from cars, trucks and machinery
- Wire fencing

No waste is generated by Boral.

3.7 Asbestos Containing Materials

The facilities on site were constructed prior to 1986. Therefore the likelihood that the site contains asbestos containing materials (ACM) is considered high. Boral have indicated that asbestos containing materials were removed from some buildings in the early 1990s.

ACM is thought to be present in the roof of the former workshop and locomotive shed, and in the residential buildings.

This Phase 1 ESA should not be considered an asbestos survey.

3.8 Polychlorinated Biphenyls

The main item with the potential to contain polychlorinated biphenyls (PCBs) is the transformer located on-site near the intersection of Cullen Bullen Road and Williwa Street. The transformer was in good condition, with no obvious leaks or damage. The age of the transformer is unknown, however is thought to have been installed before 1992.

Four (4) former transformers were observed stored onsite in a vacant area to the west of the power house building. The transformers were open and contained oil and water. The transformer oil may contain PCBs.

3.9 Ozone Depleting Substances

Ozone depleting substances (ODS) are not considered to be an issue on the site.



Section 3 Site Reconnaissance

3.10 Radioactive Substances

The site representative reported that no radioactive materials are currently stored or used on the site.

Radioactive detectors were used onsite for mass flow and levels in the 1960s and 1970s. The site representative stated that the use of these detectors was regulated and they are not considered a significant issue.

No potential or known issues were identified with respect to radioactive substances.

3.11 Noise, Odour and Nuisance

No significant issues associated with noise, odour or nuisance were noted during the site assessment.

The Annual Environmental Management Report (Boral, 2003) indicated that no complaints were received from the Portland community during 2003.

3.12 Stockpile Sampling

A limited stockpile characterisation of ash material located on the northern side of the residential buildings on Williwa Street was carried out during the site assessment. The stockpile was estimated to be 3 metres high, 14 metres wide and 75 metres long, with a total volume of approximately 3,150 cubic metres (m³).

Three samples of ash material (SP01, SP02 and SP03) were collected from the stockpile using a hand auger at a depth of approximately 0.3 metres below ground level (bgl). The samples were submitted to Australian Laboratory Services (ALS) in Smithfield for analyses of inorganics (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury) and polycyclic aromatic hydrocarbons (PAHs).

The analytical results of the ash samples are presented in **Table 1** and have been assessed against the health based investigation levels (HILs) published in the '*National Environment Protection (Assessment of Site Contamination) Measure' (NEPM)* (1999) as compiled by the National Environment Protection Council (NEPC). The NEPM (NEPC, 1999) health investigation levels (HILs) have been developed for a range of land use categories. For each type of land use, appropriate generic exposure scenarios and relevant generic exposure factors have been considered in developing a range of HILs.

It is understood the stockpiled ash material is to be reused on site in the proposed redevelopment plans. The analytical results have therefore been compared to the NEPM HIL-A for 'Standard' residential with garden/accessible soil and HIL-E for parks, recreational open space and playing fields.

The inorganics and PAH analytical results for the ash samples were less than the guideline concentrations from NEPM HIL-A and HIL-E. The samples contained concentrations of chromium, copper, lead, nickel and zinc above the laboratory's LOR but below the guideline concentrations. Sample SP01 had an arsenic concentration above the LOR. PAHs were not detected above the LOR in the three samples analysed.

The analytical results from this investigation are consistent with those from previous investigations of ash material on the northern side of Quarry 1 (Dames & Moore, 1995b) and at the Williwa Street Ash Dump (Dames & Moore, 1996b).

It should be noted that the number of samples collected may be less than that required to allow characterisation of the stockpile for off-site disposal or beneficial reuse onsite.

The laboratory reports are available in Appendix E.

Conclusions and Limitations

Section 4

URS make the following conclusions regarding the potential for land contamination at the site.

- The site is part of a former quarry that has been operated by Boral and predecessors since the 1800s. The cement plant closed in 1991. The property (quarry and cement plant) covers an area of approximately 84 hectares, approximately 10.5 hectares of which is the subject of this Phase 1 ESA. The site is covered by buildings, with the remaining areas consisting of paved areas, vacant land and a site screen created from ash material.
- The site is predominately level, with a slight slope to the north towards the quarries. The bedrock geology of the site is Devonian limestone. The nearest identified surface water body to the site, and the destination of surface water drainage from the site and surrounding area, is Quarry 3 is located directly to the north. The groundwater flow is likely to be in the same direction.
- The site appears to have been owned by various companies for quarrying and cement production since 1832. The site is currently owned by Boral and parts by the Anglican Church Property Trust Diocese of Sydney. The site is proposed to be redeveloped for a mix of residential and commercial developments and open space.
- Previous environmental investigations conducted on site, and on the quarry as a whole, have identified the
 presence of contamination. Ash material from the former boilers has been spread across large areas of the
 site and as a screen behind the residential properties along Williwa Street. Water in Quarries 1 and 2 to the
 north of the site contains low concentrations of chromium and has a pH of up to 10. Surface soil samples
 collected around the residential buildings along the northern side of Williwa Street contained concentrations
 of some metals were detected above threshold concentrations.
- Coffey Geosciences Pty Ltd prepared a remediation and validation plan (RVP) in 2004 for a proposed residential subdivision of the cottages on the northern side of Williwa Street. The RVP addressed concentrations of metals in the surface soil that exceeded threshold concentrations, and presented an approach and methodology for site remediation and validation.
- Potential current and historical on-site sources of soil/groundwater contamination identified during the site inspection include two (2) USTs, one (1) AST, two (2) former oils storage sumps, a former maintenance pit, old batteries, a bunded drum storage area, one (1) current and four (4) former transformers.
- Potential sources of offsite soil/groundwater contamination identified during the site inspection include the BP service station located on Williwa Street to the south of the site and the Integral Energy substation located on Saville Street to the south of the site.
- ACM is thought to be present in the roof of the former workshop and locomotive shed, and in the residential buildings. PCBs may be present in the transformers on the site.
- A limited stockpile characterisation of ash material located on the northern side of the residential buildings on Williwa Street indicated that the material contained PAH concentrations below the LOR and inorganics concentrations below the adopted guidelines. The analytical results were consistent with those from previous investigations of ash material generated on site.



Conclusions and Limitations

This conclusion and all information in this Report are given strictly in accordance with and subject to the following limitations and recommendations:

- a) The Phase 1 ESA undertaken to form this conclusion is limited to the scope of work agreed between URS and Blue Circle Southern Cement Pty Ltd as outlined in Section 1.3 ("Scope of Works") of this Report.
- b) This Report has been prepared for the sole benefit of Blue Circle Southern Cement Pty Ltd (Boral) and neither the whole nor any part of this Report may be used or relied upon by any party other than Blue Circle Southern Cement Pty Ltd.
- c) The investigations carried out for the purposes of the Report have been undertaken, and the Report has been prepared, in accordance with normal prudent practice and by reference to applicable environmental regulatory authority and industry standards, guidelines and assessment criteria in existence at the date of this Report.
- d) This Report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by URS for use of any part of this Report in any other context.
- e) This Report was prepared between 21 October 2008 and 8 June 2010 and is based on the conditions encountered on the site and information reviewed during the time of preparation. URS accepts no responsibility for any changes in site conditions or in the information reviewed that have occurred after this period of time.
- f) Where this Report indicates that information has been provided to URS by third parties, URS has made no independent verification of this information except as expressly stated in the Report.
- g) Given the limited Scope of Works, URS has only assessed the potential for contamination resulting from past and current known uses of the site.
- h) Inspections undertaken in respect of this Report are limited to visual inspections only and are constrained by the particular site conditions, such as the location of buildings, services and vegetation.
- i) No sampling or laboratory analysis has been undertaken by URS as part of this investigation. URS does not guarantee that contamination does not exist at the site.
- j) Except as otherwise specifically stated in this Report, URS makes no warranty or representation as to the presence or otherwise of asbestos and/or asbestos containing materials ("ACM") on the site. If fill has been imported onto the site at any time, or if any buildings constructed prior to 1970 have been demolished on the site or materials from such buildings disposed of on the site, the site may contain asbestos or ACM.
- k) No investigations have been undertaken into any off-site conditions, or whether any adjoining sites may have been impacted by contamination or other conditions originating from this site.
- I) The conclusions are based solely on the information and findings contained in this Report.
- m) Except as specifically stated above, URS makes no warranty, statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use, development or redevelopment of the site.



Conclusions and Limitations

Section 4

- n) Use, development or re-development of the site for any purpose may require planning and other approvals and, in some cases, environmental regulatory authority and accredited site auditor approvals. URS offers no opinion as to whether the current use has any or all approvals required, is operating in accordance with any approvals, the likelihood of obtaining any approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environmental works.
- o) URS makes no determination or recommendation regarding a decision to provide or not to provide financing with respect to the site.
- p) The ongoing use of the site and/or use of the site for any different purpose may require the owner/user to manage and/or remediate site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this Report.
- q) Any estimates for potential costs are presented as preliminary estimates only as at the date of the Report. The estimate of potential costs has been based on URS experience and judgement and, in some cases, on cost information provided by site management. Unless as otherwise expressly stated in this report, no detailed guotation has been obtained for rectification of issues and/or other actions identified in this Report. The cost estimates that have been provided may therefore vary from actual costs at the time of expenditure. Where estimates are presented as output from statistical simulations, the estimates are by definition prone to variation in line with accuracy of available information. If events do not occur as assumed, actual results may vary significantly from the current assessment. Accordingly, URS does not confirm or guarantee the achievement of the forecasts, as future events, which by their very nature are not capable of independent substantiation. Similarly, URS expressly disclaims responsibility for any changes that may occur that affect the estimates and conclusions drawn after this time. Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.



ReferencesSection 5

Blue Circle Southern Cement, Annual Environmental Management Report, Portland Site, Review for 2003.

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Coffey Geosciences Pty Ltd (Coffey), *Remediation and Validation Plan, Lot 1 DP 109592 and Part Portion 52 Williwa Street, Portland, NSW, 5* March 2004

Dames & Moore, Water Sampling in Quarries at BCSC Portland Works, June 1994

Dames & Moore, Assessment of Bottle Kiln Water Quality at Portland Quarry, January 1995a

Dames & Moore, Ash Pile Sampling at Blue Circle Southern Cement Portland Works, 21 April 1995b

Dames & Moore, Contamination Assessment and Conceptual Remediation Plan, Blue Circle Southern Cement Portland Works, 13 February 1996a

Dames & Moore, Williwa Street Ash Dump Assessment, Portland, NSW, 15 April 1996b

HLA-Envirosciences Pty Ltd (HLA), Annual Report, Surface Water Monitoring - October 2006, January 2007

Noel Bell Ridley Smith & Partners Pty Ltd (NBRS&P), *Portland Cement Works, Williwa Street Cottages and Buildings, Portland, Conservation Management Plan*, October 2003

URS Australia Pty Ltd (URS), May 2002 Monitoring Round of Portland Quarry, June 2002

URS Australia Pty Ltd (URS), April 2003 Monitoring Round of Portland Quarry, May 2003

URS Australia Pty Ltd (URS), May 2004 Monitoring Round of Portland Quarry, June 2004

URS Australia Pty Ltd (URS), Portland Cement Works Closure Plan, 2008



PHASE 1 ENVII	ONMENTAL SITE ASSESSMENT PORTLAND
	CEMENT WORKS

Tables



Table 1

Ash Stockpile Sample Analytical Results Phase 1 Environmental Site Assessment Portland Cement Works

Sample ID	
Sample Date	
-	

SP01_31/10/08	SP02_31/10/08	SP03_31/10/08
31/10/2008	31/10/2008	31/10/2008

Analyte	Units	LOR	HIL A	HIL E					
Total Metals									
Arsenic	mg/kg	5	100	200	7	<5	<5		
Cadmium	mg/kg	1	20	40	<1	<1	<1		
Chromium	mg/kg	2	12%	24%	10	8	16		
Copper	mg/kg	5	1000	2000	35	45	35		
Lead	mg/kg	5	300	600	18	17	16		
Mercury	mg/kg	0.1	15	30	<0.1	<0.1	<0.1		
Nickel	mg/kg	2	600	600	11	7	9		
Zinc	mg/kg	5	7000	14000	41	38	38		
Polycyclic Aromatic Hydrocarbons									
Naphthalene	mg/kg	0.5			<0.5	<0.5	<0.5		
Acenaphthylene	mg/kg	0.5			<0.5	<0.5	<0.5		
Acenaphthene	mg/kg	0.5			<0.5	<0.5	<0.5		
Fluorene	mg/kg	0.5			<0.5	<0.5	<0.5		
Phenanthrene	mg/kg	0.5			<0.5	<0.5	<0.5		
Anthracene	mg/kg	0.5			<0.5	<0.5	<0.5		
Fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5		
Pyrene	mg/kg	0.5			<0.5	<0.5	<0.5		
Benz(a)anthracene	mg/kg	0.5			<0.5	<0.5	<0.5		
Chrysene	mg/kg	0.5			<0.5	<0.5	<0.5		
Benzo(b)fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5		
Benzo(k)fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5		
Benzo(a)pyrene	mg/kg	0.5	1	2	<0.5	<0.5	<0.5		
Indeno(1.2.3.cd)pyrene	mg/kg	0.5			<0.5	<0.5	<0.5		
Dibenz(a.h)anthracene	mg/kg	0.5			<0.5	<0.5	<0.5		
Benzo(g.h.i)perylene	mg/kg	0.5			<0.5	<0.5	<0.5		
Total PAHs	mg/kg	-	20	40	-	-	-		
Moisture Content									
Moisture Content (dried @ 103°C)	%	1			7.8	6.4	9.4		

Notes:

LOR = limit of reporting

mg/kg = milligrams per kilogram

Exceeds the National Environment Protection Council 1999 Health Investigation

Levels - 'A' 'Standard' residential with garden/accesible soil Exceeds the National Environment Protection Council 1999 Health Investigation Levels - 'E' Parks, recreational open space and playing fields
Figures







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	PHASE 1 ENVIRONMENTAL SITE ASSESSMENT PORTLAND CEMENT WORKS
Appendix A	Titles





SEARCH RESULT

AUSEARCH PTY. LIMITED ABN 17 002 735 195 Level 12, 75 Elizabeth Street, Sydney PO Box A2174, Sydney South 1235 DX 315 Sydney Email: ausearch@ausearchdirect.com.au Web: www.ausearchdirect.com.au Tel (02) 9230 0630 Fax (02) 9230 0640

SEARCH REPORT

The lands subject of this report are those parcels in the Local Government Area of Lithgow, Parish of Cullen Bullen and County of Roxburgh being those parts of the former Portland Cement Works, Williwa Street, Portland shown edged red on the annexed site plans.

A search of records maintained by the Office of Land and Property Information has disclosed that the subject parcel stem from and comprise parts of original Portions 52 and 53 the historic chain of title to those parcels has included

Volume 860 Folio 73 Volume 1411 Folio 128 Volume 1478 Folio 45 Volume 1482 Folio 248 Volume 2663 Folio 107 Volume 2672 Folio 67 Volume 5437 Folio 28 Volume 5461 Folio 163 Folio 1/115461 Folio Auto Consol 1478-45 Folio 1/109592 Folio Auto Consol 5461-163

Inspection of those registers has identified ownership to have been

As to the WHOLE

from circa 1887 to 1898 The Cullen Bullen Lime and Marble Works Company Limited *later* The Cullen Bullen Lime & Cement Company Limited

1

from 1898 to?

George Raffan

from? The Commonwealth Portland Cement Company to 1902 (*orange, green & yellow*) Limited to 1903 (*pink*)

AUSEARCH PTY. LIMITED - More than 45 years of professional service

SEARCH REPORT

Continued as to the ORANGE, GREEN & YELLOW

from 1902 to 12. 9.1912 The Law Guarantee and Trust Society Limited

from 12. 9.1912 to 4. 3.1915 William Thomas Dodds and Frank Lay

from 4. 3.1915 to 5. 5.1915 (*(orange)* to 12. 4.1944 *(green)* to 6.11.1989 *(yellow)* Commonwealth Portland Cement Company Limited

Continued as to PINK & ORANGE

from 1903 (*pink*) from 5.5.1915 (*orange*) to date The Church of England Property Trust Diocese of Sydney (pink)

The Church of England Property Trust Diocese of Bathurst *(orange)* **now** Anglican Church Property Trust Diocese of Sydney

SEARCH REPORT

Continued as to GREEN

from 12. 4.1944 to 1. 8.1974	The Commonwealth of Australia
from 1. 8.1974 to 6.11.1989	The Commonwealth Portland Cement Company Limited
from 6.11.1989 to date	Blue Circle Southern Cement Limited

Continued as to YELLOW

from 6.11.1989	Blue Circle Southern Cement Limited
to date	

During the course of this search it was noted that the lands shown shaded brown on the plans catalogued as S.D.B.60/135 (including the land in plan 3724.3090) were resumed for the purposes of a pumping station pursuant to notification in Government Gazette dated 7.10.1960.

Whilst those parcels comprise parts of the land in Volume 5461 Folio 63 (*yellow*), no formal notification of that resumption has been endorsed on title. A copy of the 1960 Government Gazette is not available for copy, however it appears the resumption was made by the Minister for Public Works as Constructing Authority on behalf of the Blaxland Shire Council.

24 October, 2008





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22312 New South Wales. [CERTIFICATE OF TITLE.] (C.) Occler A" 1934 Reinclus after pransfer Nº 365475-REGISTER BOOK, 1482Folio 248 Reference to but fichfact Vor. Tol 1411 John 183 CANCELLED The June quaranter and Trust Security Lunder of grane of Cartinate of Sec. - Uturne Fifth folio ATA area aurendenters to heraun after hander mandered 363 1175 and the propriete of our Establish for sea pto Sector recepturtely to the second low and constitues of any contenant in the Guards between per represent to card also alleft to Such excustering here and wheat as un religion herear in Much filler of land situated al Allact to such maintenens to a und interior and county of herein a Minist filler of land situated att Scattered in the foreship of (11) the bittlere and county of hereingher on the ministry about detect three in the foreship for the foreship of the bittlere and county of hereingher on the densities and of dettawa Theorem at the stand this and one to be foreship of the bittlere and county of hereingher on the densities and of dettawa Theorem at the stand this and one to be foreship of the bittlere and to and county of the densities and of dettawa Theorem and the stand this and one to be been and the bittlere and the standard foreing the densities and the standard there is the tool by the bittlere the bittlere the board of the bittlerey one and the tool of the bittlere to the board of the bittlere bittlere is the tool by the bittlere there there is fifty on and are that the again on the tool by a lace for the tool beaused to be the tool of the tool of the bittlerey in all beaused to be tool by a lace for the bit on half lastice is the truth by the terthere tool and the based of the based of the based for the bittere that the tool of the tool by the terthere tool tool of the based of the based tools and on half lastice is the truth by the terthere tool and the based of the based bearing tools observe folly tools on the based by part of the based on the tools of the based of the based bearing tools observe folly tools on the based by part of the based on the tools of the based of the based based bearing tools observe folly tools on the based by parts of the based on the based by the constance bearing tools observe folly tools on the based by parts of the based on the based by the constance bearing tools observe folly tools on the based by parts of the based on the based by the based based and based bearing to the based by the based of the based of the based of the based by the based based and the based of the based by the based based and based b beaudany of third produces becausy heading hearty chains again on the beat by the bastic beaudary of this further beaung heathery hearty chain to believe after source and again in the souther I thus gration having southary having during to be talling these apersual and again in the south by that Shuk bearing thesholy forly har share analy with land on harf links to the paint of conventioned as shear on the plan linear and therein solver and hang appoint of south postion SE sugardly granked to Thomas Alumay by bracia track taked the fireway in the day of Italian (in this work, keylis humanic and source) say registered in the Land Siller (fire styping tolume 223 file. 220 word the White of Second fire 53 are another for the source and there by bear of the marker to the plan to the fire the source of the togesheet and the source of the bay of fire the the source again and the togesheet and the source of the transfer to the fire the source and the togesheet and the source of the transfer to the source of the total to the source again to the source of the togesheet and the source of the transfer to the fire the total to the source again to the source of the transfer to the source of the transfer to the transfer to the total to the source of the transfer to the source of the transfer to the source of the transfer to the transfer to the transfer to the transfer to the source of the transfer to the source of the transfer to the transfer to the transfer to the source of the transfer to the source of the transfer to the transfer to the transfer to the source of the transfer to the source of the transfer to the transfer to the transfer to the source of the transfer to the source of the transfer to the transfer to the transfer to the transfer to the source of the transfer to the transfer to the source of the transfer to the transfer t Which said Grant are detrimined in the frate other of the said proved dependent in the Elegentrant of Land In Triticoro colloroof at have the work appending raise and offer my fundad and Maye Stories in Con duyof W. Mislex Deputy Registrar General Nokfeedteen referentste amonght the rescarbered and conditions continued in the Ma 673434 [132] Jose Da and George Guarander Suid inde accident Docide Climitica to Diffiom Thomas Pords of South (part report to seve the following Reperiodiciono d'Activida (<mark>broydn) S</mark>urney Grybond S<mark>ur suie and <u>Bark</u> Index by due ac soint iontants ______ and suite Prioricalistic ______ 17 = Sophermeters ______ 2</mark> Depudy Keyektra General Alexa 14 a is subscript 3 Matheliacul, 2. 11 87 Source of alterney and it " Eight mbor 1911 Pom the and the Kan's Guaranter First and avaident Society September 1892 No. 6187+53 disriled & Edward Stry Stonpoon and alexander Second and course Robert Blicker ng she honipiras General 12 th Seydemologi Walkered and an invest 10th September rt 12 rates the ni lê ndê fil Biji Anteliaus! #Ruaus 6784 The within Causal No. is hereby withdrawn. 191 2 Dated 142 Relinald REALINAR GENERIL AUSEARCH PTY. LIMITED

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• no 9574 Power & attemy pates 13 Potosa 1914. soop ine said William Showas Do date and Frank hay to Edward Percy Simpsen 10-7 when any 1915 Manaused and entered H Grarch 1915 STARR LOUGH ______ o'clock in the after noon C.** 5 Morkelianes Ø. REGISTICAN CENERAL Ho. a 158/82 TRANSFER paint 21st Decombor 1914 rope the said fullian Thomas Dodds and Prank Last to Commonwealth forthand Comment / Company Similar 10 telucus/1915 Of the last a this docent roddied and whered He March 1915 address of the said of the said At o'clock in the after non (When the second at ALGISTRAR DENERIL of the said Commenced and States 1915 Marger in and 100406 BL _T 2000 <u>- 1990 - 1990</u> 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 and the second of the land within described Produced and entered and an Canoelica & Cartificate Not Fieldauls REBISTRAS DENERAL a secon as Yol 46 65 Fol 197 This book is Canodial and Carliftonia of This invasi Val. <u>2017</u> Feb. <u>27</u> Jan Kurkur Status Por Relicent O Menter Conserved Registrar General. a a constant de la co Q. -

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New South Wales. CERTIFICATE OF TITLE. (C.) (Order Nº 4 245812) (Reference to hast bentificate) (Residue after Fransport A 22 9355) 2672 Folio 67 (tol. 11.182 " Solic 248) Vol. CANCELLED the Comment IMITAA by within of birthficat of Till Volume 11492 "roles 248 now surrendered as to Reader after Fransfer at A229355 is now the proprietor of an Estat in See Simple Subject neurtheless to the reservations and conditions of any contouned in the Grands hereinafter referred to and also subject to such commitraines here and interests as are notified hereon in That prece of land schraked as portland in the shire of Blaxland parish of kullen Bullin and County of Kexburgh containing e Vinchy una acres two rords six and three quarters perches or thereabout as shown in the plan hereon and therein edged ud being part of portion 52 originally granted to Thomas etterray by brown Spant dated the twenty much day of Fibruary on thousand light hundred and seventy six registered in the hand litles office Sydney Volume 253 Jolio 220 and the whole of portion 53 originally granted to Thomas etterray by brown Grant dated the ninekenth day of fume one shousand ught hundred and eighty two registered in the said office volume by Folio 216. Which said Grante are delineated in the public imap of she said plansh in the appartment of hands Ann Witness whereof I have bereinto regined my name and affixed my seal this Manual A. and Marsand nine hundred and Seater day of Signed the 7th day of Same MI Chas my in the presence of huby Registrar General a Conficcation reperied to itmongst the recervations and conditions contained in the Grands above referred to are the following normaly Reservations of minerals to Car an Ing Carpuny Registral General No D238bog In pursuance of Section 46A of the Real Property Act 1900 The Commonwealth of Australia as a Coporation under Section 57 of Lands Acquisition Act 1906-1936 (Commonwealth) is registered as proprietor of part of Portion 52 of the land within described Produced 25th October 1943 and entered 12th April 1944 at 10 oclock in the forenoon In 1918 School and - to - William Registrar General Con

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For 16 Wed. 5461 D 329 12] Avaretras General.

AUSEARCH PTY. LIMITED









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Total area included in certificate, 992. 2r. 6%4p. All lengths shown hereon are in feet scale 300 feet to 1 inch.



19463613 now the registered proprietor of the land within described. inthe See TRANSFER No. 11002303 dated <u>146 10 24</u> 10 AUSEARCH PTY. LIMITED 19 august 1974 (Sevenaria) Natio REGISTRAR GENERAL

5461_163_01.jp2 201. Appn. No. 02650 10.43 New South Wales. [CERTIFICATE OF TITLE.] Reference to last cortificate ORDER NO.D329121. Vol. 2672 Fol. 67 AC 5461-163 NEW FOLIO 1 REGISTER BOOK. 5461 Fol. 163 Vol CIRM S THE COMMONWEALTH PORTLAND CEMENT COMPANY LIMITED, by virtue of Certificate of Title Volume 2672 Folio 67 now surrendered is now the proprietor of an Estate in Fee Simple, subject nevertheless to the reservations and conditions, if any, contained in the Grantshereinafter referred to, and also subject to such encumbrances, liens, and intérests as are notified hereon, in That piece of land situated in the Town of Portland - Parish of Cullen Bullen , and County of Roxburgh in the Shire of Blaxland -containing Minety eight acres three roods three and one quarter perches or thereabouts as shown in the plan hereon and therein edged red being part of Portion 52 originally granted to Thomas Murray by Frown Grant dated the 29th day of February 1876 Volume 253 Folio 220 and the whole of Portion 53 originally granted to Thomas Murray by Crown Grant dated the 19th day of June 1882 Volume 607 Folio 216. en a In witness whereof I have hereunto signed my name and affixed my Seal, this - percenth day of December 1944. Signed in the presence of Wiff. Friends Carl Registrar General. IGI THE 80 13208 111 53 52 98a 3r 314p 674 OMA-8180 2/4 m 8016.8m 90 FE 23/4 VILLINA 0329121 Scale - 500ft. to one inch. NS-11-80-199 dated 5 hovember 95 NOT IFICATION REFERRED TO from the said the lepinger on men Amongst the reservations and conditions contained in pany finited to Bank m alle the Grants above referred to are reservations of min-Lana Karaa erals. Electric U. Jones A. C. K. Entered Y: UD years 1958.



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19139505 Caveat by	
LLOYDSTOM BOYD DAVID M	ONCE
Registered 14 12 2002	
Actor 162 Johnston	

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The second second	service of notices is drydston Boyd
and the second	Daniel March 135 Wycenbe Road
	Danid Marck, 135 Wycanbe Road Neutral Bay 2089.

9139505 CAVEAT. AB983834 ADDRESS OF SERVICE OF NOTICES IS NOW A.J. LAW & CO. SOLICITORS SUITE 22D, LEVEL 21, 185 ELIZABETH STREET SYDNEY NSW 2000. RECHTERED 16-12-2005.

NO FURTHER DEALINGS TO BE REGISTERED.



Rachin CS 101512016

e - Marine

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Information provided through Legalco Management Pty Ltd an approved LPINSW Information Broker.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: AUTO CONSOL 1478-45

SEARCH DATE	TIME	EDITION NO	DATE
28/10/2008	11:49 AM	-	-

VOL 1478 FOL 45 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS AT PORTLAND LOCAL GOVERNMENT AREA LITHGOW CITY PARISH OF CULLEN BULLEN COUNTY OF ROXBURGH TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

ANGLICAN CHURCH PROPERTY TRUST DIOCESE OF SYDNEY

SECOND SCHEDULE (1 NOTIFICATION)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS

LOT 1 IN DP922029 LOT 1 IN DP923398 TITLE DIAGRAM -----DP922029 DP923398.

*** END OF SEARCH ***

PRINTED ON 28/10/2008

*Any entries preceded by an asterisk do not appear on the current edition of the certificate of title. Warning: The information appearing under notations has not been formally recorded in the register. Ausearch Pty Ltd - Legal Searchers - Legal Agents Tel:(02) 9230 0630 - Fax (02) 9230 0640 - DX 315 Sydney ABN 17 002 735 195

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/115461

SEARCH DATE	TIME	EDITION NO	DATE
28/10/2008	11:40 AM	1	9/1/1997

LAND

LOT 1 IN DEPOSITED PLAN 115461 LOCAL GOVERNMENT AREA LITHGOW CITY PARISH OF CULLEN BULLEN COUNTY OF ROXBURGH TITLE DIAGRAM DP115461

FIRST SCHEDULE

ANGLICAN CHURCH PROPERTY TRUST DIOCESE OF SYDNEY

(CN 2706485)

SECOND SCHEDULE (1 NOTIFICATION)

- -----
- 1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO. UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 28/10/2008

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/109592

SEARCH DATE	TIME	EDITION NO	DATE
24/10/2008	11:05 AM	1	30/10/1989

LAND

LOT 1 IN DEPOSITED PLAN 109592 LOCAL GOVERNMENT AREA LITHGOW CITY PARISH OF CULLEN BULLEN COUNTY OF ROXBURGH TITLE DIAGRAM <u>DP109592</u>

FIRST SCHEDULE

BLUE CIRCLE SOUTHERN CEMENT LIMITED

(T <u>Y660369</u>)

SECOND SCHEDULE (1 NOTIFICATION)

1 LAND EXCLUDES MINERALS

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO. UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PRINTED ON 24/10/2008

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: AUTO CONSOL 5461-163

SEARCH DATE	TIME	EDITION NO	DATE
24/10/2008	9:08 AM	-	-

VOL 5461 FOL 163 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS AT PORTLAND LOCAL GOVERNMENT AREA LITHGOW CITY PARISH OF CULLEN BULLEN COUNTY OF ROXBURGH TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

BLUE CIRCLE SOUTHERN CEMENT LIMITED

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)

* 2 <u>Y127947</u> EASEMENT FOR TRANSMISSION LINE 25 WIDE & VARIABLE AFFECTING THE PART OF LOT 1 IN DP1130700 SHOWN SO BURDENED IN <u>DP640977</u>

NOTATIONS

NOTE: RESUMPTION FOR PUMPING STATION SITE AND EASEMENTS FOR MAIN GOV GAZ 7/10/1960 FOL 3236/7. SEE CROWN PLANS 3724.3090 & 3725.3090 UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS

LOT 53 IN DP755769 LOT 1 IN DP1130700 TITLE DIAGRAM

CROWN PLAN 332.1496 DP1130700.

*** END OF SEARCH ***

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... 19

DRESS ALL MAIL TO THE SECRETARY PT. 7F PUBLIC WORKS O BOX 43 SYDNEY, N.S.W. TELEGRAPHIC ADDRESS STATEWORY AS YDNEY

DEPARTMENT OF PUBLIC WORKS, N.S.W.

BRIDGE AND PHILLIP STREETS

SYDNEY,_____

The Registrar General,

SYDNEY.

PLEASE QUOTE No	S.60/855.
IN YOUR REPLY	

TELEPHONE INQUIRIES . B 056, EXT. 2523.



SUBJECT:

Blaxland Shire Council: Portland Sewerage - Lend and easements proposed to be resumed.

REFERENCE:

Above papers.

3

Gaz. 7-10-60 fo 3236/7

Herewith helio, illustrating the area over which action is proceeding, the notification of which will be published forthwith in the Government Gazette.

Encl.

Chid. on In. Portland

M.W. 23.5.60

JUN . 7 4 MAY 1960







an. 58 16568 Shire of Blaxland <u>P.W.D.</u> PORTLAND SEWERAGE 1 showing land proposed to be acquired for Pumping Station site. Parish of Cullen Bullen County of Roxburgh Scale: 50 Feet to an Inch <u> F B.02207</u> M TOWN POR. 52 The Commonwealth Portland Plan in D 238609 Cement Co. Ltd. Pt CT vol 5461 Fol. 163 Rec rnesh Canc OF (12:0%) inira fan c 9р. 68 216 214 Hard's 500 *., -PAMANAY WILLINA to A GU on F.P. res & 60 al angle in PHIImes 51. PORTLAND A I, Neil Haydon Druery, of Sydney, a surreyor registered under the Surveyors Act, 1929 - 1946 hereby certify that the survey represented in this plan is accurate and has been made under my im-mediate supervision in accordance with the Survey Practice Regulations, 1933 and was completed on 91h April, 1957. Carl D. Capilloppes 5 7 3000



AUSEARCH PTY. LIMITED

]	PHASE 1 ENVIRONMENTAL SITE ASSESSMENT PORTLAND CEMENT WORKS
Appendix B	Planning Zone Information



Ø1002/011

2 (02) 6354 9999 昌 (02) 6351 4259

TO GENERAL MANAGER PO BOX 19, LITHGOW NSW 2790

20/11 2008 THU 12:03 FAX 0263512927 Regional Ser Vices LCC



URS AUSTRALIA PTY LTD LEVEL 3 116 MILLER STREET NORTH SYDNEY NSW 2060

PLANNING CERTIFICATE UNDER SECTION 149, **ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979**

CERTIFICATE NO: 149(5)-08-0074

YOUR REF: 43177139.10400 RECEIPT NO: 185673

PROPERTY NO: 101674 ISSUE DATE: 30/10/2008

PROPERTY ADDRESS: WILLIWA STREET PORTLAND NSW 2847 OWNER: BLUE CIRCLE SOUTHERN CEMENTLIMITED

LAND PARCEL DESCRIPTIONS: Part Lot 52 DP 755769 Lot 53 DP 755769

IN ACCORDANCE WITH SECTION 149(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979, IT IS CERTIFIED THAT AT THE DATE OF THIS CERTIFICATE THE FOLLOWING PRESCRIBED MATTERS RELATE TO THE LAND:

LITHGOW CITY LOCAL ENVIRONMENTAL PLAN 1994

GENERAL EFFECT OF PLANNING INSTRUMENT ON THE ABOVEMENTIONED LAND AND DETAILS OF THOSE PURPOSES FOR WHICH DEVELOPMENT MAY OR MAY NOT BE UNDERTAKEN WITHIN THIS ZONE:

2(V) Village - L.E.P. 1994 Zone:

Zone objectives and development control:

Set out below for the zone are:

(a) the objectives of the zone;

- (b) the development that may be carried out without development consent;
- (c) the development that may be carried out only with development consent; and
- (d) the development that is prohibited.

In addition to the controls contained in LEP 1994, Clause 29 of the Environmental Planning and Assessment (Savings and Transitional) Regulation 1998 sets out further circumstances where development consent will be required for particular development. These circumstances may include development that does not require consent under LEP 1994. A copy of Clause 29 is attached (Annexure "B").

The Council must not grant consent to development unless it is of the opinion that such development is consistent objectives for the zone in which it is proposed to be carried out.

The note helps to explain various clauses, but is not part of the legal document

🕐 www.lithgow.nsw.gov.au NOTE: The village zone covers the towns and villages outside Lithyow, providing for res Mevelopment hurcellocile jtagow.nsw.gov.au wider range of development, including uses necessary within urban areas in rural se ADDRESS CORRESPONDENCE

Sec. Sec. Sec.

1. Objectives of the zone

- The objectives of the zone are:
- (a) to promote development which is compatible with an urban function within a rural area;
- (b) to maintain the rural atmosphere of the village;
- (c) to safeguard residential amenity within the village; and
- (d) to prevent pollution of water supply catchments and water quality in major water storages.

2. Without development consent

Development for the purpose of single dwellings, where:-

(a) a sewer is available; or

(b) the Council is satisfied by a geotechnical assessment that disposal of domestic waste water within the boundaries of the allotment is feasible.

3. Only with development consent

Any development except that permitted without consent or prohibited.

4 Prohibited

Development for the purpose of extractive industries; intensive livestock keeping establishments; junk yards; mines; offensive or hazardous industries.

DOES A STATE ENVIRONMENTAL PLANNING POLICY, REGIONAL ENVIRONMENTAL PLAN OR DRAFT STATE ENVIRONMENTAL PLANNING POLICY OR REGIONAL ENVIRONMENTAL PLAN OF WHICH THE MINISTER HAS NOTIFIED THE COUNCIL APPLY TO THE LAND?

Yes - See Annexure " Λ ".

Clause 29 of the Environmental Planning and Assessment (Savings and Transitional) Regulation 1998 affects the provisions of certain State Environmental Planning Policies and how they apply to the land. A copy of Clause 29 (Annexure "B") is included and should be read in conjunction with the State Environmental Planning Policies listed.

WHERE THE LAND IS VACANT, IS THE FRECTION OF A DWELLING HOUSE PROHIBITED BY REASON OF A STANDARD RELATING TO THE MINIMUM AREA ON WHICH A DWELLING MAY BE ERECTED?

No, if the land is vacant.

Not applicable, if a dwelling is constructed on the land.

DOES THE DEMOLITION OF ANY BUILDING ON THE LAND REQUIRE DEVELOPMENT CONSENT TO BE OBTAINED?

Clause 29 of the Environmental Planning and Assessment (Savings and Transitional) Regulation 1998 (Annexure "B") provides that development consent is required for the demolition of a building.

DOES A DEVELOPMENT CONTROL PLAN APPLY TO THE LAND?

Νo.

DOES A SECTION 94 CONTRIBUTIONS PLAN APPLY TO THE LAND?

Section 94 Contribution Plans apply to coal related developments and to certain developments in 1(a),1(c),1(d) and 1(f) rural zonings with respect to Rural Roads and Rural Fire Services. For further details please contact Council.

WOULD ANY APPLICATION TO CARRY OUT DEVELOPMENT ON THE LAND CONSTITUTE STATE SIGNIFICANT DEVELOPMENT IN ACCORDANCE WITH SECTION 76A(7)(B) OF THE ACT?

Yes - Development to which SEPP No. 34 and SEPP No. 48 applies. Also new coal mines requiring new coal leases, certain extractive industries, certain aquaculture industries, railway freight terminals in specific circumstances and environmentally sensitive areas of State significance.

IS THE LAND EFFECTED BY SECTION 38 OR 39 OF THE COASTAL PROTECTION ACT, 1979, AS NOTIFIED BY THE DEPARTMENT OF PUBLIC WORKS?

No.

HAS THE LAND BEEN PROCLAIMED TO BE WITHIN A MINE SUBSIDENCE DISTRICT WITHIN THE MEANING OF SECTION 15 OF THE MINE SUBSIDENCE COMPENSATION ACT, 1961?

No,

IS THE LAND AFFECTED BY ANY ROAD WIDENING AND/OR REALIGNMENT UNDER -1) DIV 2, PART 3, ROADS ACT, 1993 2) PLANNING INSTRUMENT 3) RESOLUTION OF COUNCIL?

Not at this date.

IS THE LAND AFFECTED BY A RESOLUTION ADOPTED BY COUNCIL OR ANOTHER PUBLIC AUTHORITY TO RESTRICT DEVELOPMENT BY REASON OF THE LIKELIHOOD OF: 1) LANDSLIP 2) SUBSIDENCE 3) BUSHFIRE 4) TIDAL INUNDATION 5) ACID SULPHATE SOIL 6) ANY OTHER RISK?

The land is not shown as bush fire prone in Council's records. Further, no Council resolution exists for the land in relation to any other hazards listed above.

IS ANY DEVELOPMENT ON THE LAND SUBJECT TO FLOOD RELATED DEVELOPMENT CONTROLS? (Not including development for the purpose of Group Homes or Seniors Housing)

No

IS THE DEVELOPMENT ON THAT LAND OR PART OF THE LAND FOR ANY OTHER PURPOSE SUBJECT TO FLOOD RELATED DEVELOPMENT CONTROLS?

No

IS THE LAND RESERVED FOR ACQUISITION?

Only that land zoned No. 6 - Open Space is reserved under the Local Environmental Plan to be acquired. The owner of any land within Zone No. 6 may, by notice in writing, require the Council to acquire the land. On receipt of any such notice, the Council must acquire the land to which the notice relates.

IS THE LAND AFFECTED BY MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997?

Not known.

DOES THE LAND INCLUDE OR COMPRISE OF A CRITICAL HABITAT, CONSERVATION AREA OR AN ITEM OF ENVIRONMENTAL HERITAGE?

YES - The property retains a heritage item as listed under LEP 1994. Please contact Council's Environmental & Planning Division for further information in this regard. (See Annexure "A" Attached)

THE ENVIRONMENTAL PLANNING AND ASSESSMENT AMENDMENT ACT 1997 COMMENCED OPERATION ON 1 JULY 1997. AS A CONSEQUENCE OF THIS ACT THE INFORMATION CONTAINED IN THIS CERTIFICATE NEEDS TO BE READ IN CONJUNCTION WITH THE PROVISIONS OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT (AMENDMENT REGULATION 1998, ENVIRONMENTAL PLANNING AND ASSESSMENT (FURTHER AMENDMENT) REGULATION 1998, AND ENVIRONMENTAL PLANNING AND ASSESSMENT (SAVINGS AND TRANSITIONAL) REGULATION 1998

for Roger Bailey GENERAL MANAGER 30/10/2008

For any further information, please contact the Regional Services Administration Division on (02) 63549989.

ANNEXURE "A"

THE FOLLOWING STATE POLICIES AND DIRECTIONS EFFECT LAND WITHIN LITHGOW CITY

STATE ENVIRONMENTAL PLANNING POLICY No. 1 - DEVELOPMENT STANDARDS

This Policy provides flexibility in the application of planning controls operating by virtue of development standards in circumstances where strict compliance with those standards would, in any particular case, be unreasonable or unnecessary.

STATE ENVIRONMENTAL PLANNING POLICY No. 4 - DEVELOPMENT WITHOUT CONSENT

This Policy provides that Development Consent is not required for certain permissible development.

STATE ENVIRONMENTAL PLANNING POLICY No. 6 - STOREYS

This Policy is designed to remove any confusion arising from the interpretation of provisions in environmental planning instruments which control the height of buildings by reference to a number of storeys, floors or levels which the building contains, by specifying the manner in which that number is to be determined.

STATE ENVIRONMENTAL PLANNING POLICY No. 8 - SURPLUS PUBLIC LAND

This Policy applies to surplus public lands so as to allow for sale and development in an appropriate manner.

STATE ENVIRONMENTAL PLANNING POLICY No. 9 - GROUP HOMES

This Policy controls the development of group homes on all lands where dwellings are allowed. A group home is a dwelling used to provide household environment for persons who are disabled or otherwise socially disadvantaged, whether those persons are related or not, and either with or without paid or unpaid supervision or care.

STATE ENVIRONMENTAL PLANNING POLICY No. 11 - TRAFFIC GENERATING DEVELOPMENTS

This Policy ensures that the Roads and Traffic Authority is made aware of and is given an opportunity to make representations in respect of certain traffic generating development.

STATE ENVIRONMENTAL PLANNING POLICY No. 15 - RURAL LAND-SHARING COMMUNITIES

This Policy makes rural land-sharing communities permissible within rural and non-urban zones. With Council consent, people can, collectively, own and manage a single lot of land and use it as their principal residence. Development must be environmentally sensitive and sustainable.

STATE ENVIRONMENTAL PLANNING POLICY No. 16 - TERTIARY INSTITUTIONS

Permits any kind of tertiary institution on land zoned for a specific kind of tertiary institution. It applies to land: On which development for a particular class of tertiary institution may be carried out, either with or without development consent, but on which development for other classes of tertiary institution is prohibited. Used for a college of advanced education before the date on which this policy came into effect.

STATE ENVIRONMENTAL PLANNING POLICY No. 21 - CARAVAN PARKS

This Policy facilitates long term residency in caravan parks, including subdivision by long leases of up to twenty (20) years. All new caravan parks require development consent, subject to the requirements of the policy.

STATE ENVIRONMENTAL PLANNING POLICY No. 22 - SHOPS AND COMMERCIAL PREMISES

The Policy allows, with the consent of Council, a change of use from a shop to another kind of shop or commercial premises or alternatively a commercial premises to a shop or another kind of commercial premises where the new use is prohibited under an environmental planning instrument, if the Council is satisfied that the change of use will have not more than a minor environmental impact and is in keeping with the objectives (if any) of the zone.

STATE ENVIRONMENTAL PLANNING POLICY No. 27 - PRISON SITES

This Policy facilitates the erection and use of buildings for prisons on specific sites in New South Wales.

STATE ENVIRONMENTAL PLANNING POLICY No. 30 - INTENSIVE AGRICULTURE

This Policy requires development consent for cattle feedlots of 50 or more head of cattle; requires that applications for cattle feedlots of between 50 and 1,000 cattle provide information on measures to prevent water and air pollution, soil degradation and ensure animal welfare; requires that application for cattle feedlots of between 50 and 1,000 head are advertised to allow public participation.

ANNEXURE "A" CONT

STATE ENVIRONMENTAL PLANNING POLICY No. 32 - URBAN CONSOLIDATION (REDEVELOPMENT OF URBAN LAND)

This Policy provides criteria to identify land in existing urban areas suitable for multi unit housing having regard to the regional significance of that land.

STATE ENVIRONMENTAL PLANNING POLICY No. 33 - HAZARDOUS AND OFFENSIVE DEVELOPMENT

This Policy requires specified matters to be considered by consent authorities for development proposals which are potentially hazardous or potentially offensive as defined in the policy.

STATE ENVIRONMENTAL PLANNING POLICY No. 36 - MANUFACTURED HOMES ESTATES

Helps establish well-designed and properly serviced manufactured home estates (MHEs) in suitable locations. Affordability and security of tenure for residents are important aspects. The policy applies to Gosford, Wyong and all local government areas outside the Sydney Region. To enable the immediate development of estates, the policy allows MHEs to be located on certain land where caravan parks are permitted. There are however, criteria that a proposal must satisfy before the local council can approve development. The policy also permits, with consent, the subdivision of estates either by community title or by leases of up to 20 years. A Section 117 direction issued in conjunction with the policy guides councils in preparing local environmental plans for MHEs, enabling them to be excluded from the policy.

STATE ENVIRONMENTAL PLANNING POLICY No. 44 - KOALA HABITAT PROTECTION

The purpose of this Policy is to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas. This will ensure that permanent free living populations will be maintained over their present range. The policy applies to 107 local government area within the known geographic range of koalas. The Policy provides that council can not issue consent, to affected development applications, without an investigation for core koala habitat. This Policy provides a state-wide approach to ensure that appropriate development can continue, while still ensuring the ongoing protection of koalas and their habitat.

STATE ENVIRONMENTAL PLANNING POLICY No. 48 - MAJOR PUTRESCIBLE LAND FILL SITES

This Policy makes the Minister for Urban Affairs and Planning the consent authority for major putrescible landfills in NSW. It applies to all landfills in the state which receive waste from more than one local government area, when the volume of waste to be received exceeds thresholds specified in the State Environmental Planning Policy. The Policy includes Heads of Consideration which specify the matters the Minister will need to take into account when assessing a proposal. These Heads of Consideration include ensuring that there is a legitimate demand for landfill, and ensuring that it is appropriately located. This will ensure that landfills are only approved following a comprehensive assessment.

STATE ENVIRONMENTAL PLANNING POLICY No. 55 - REMEDIATION OF LAND

Introduces statewide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals. To assist councils and developers, the Department, in conjunction with the Environment Protection Authority, has prepared *Managing Land Contamination: Planning Guidelines*.

STATE ENVIRONMENTAL PLANNING POLICY No. 60 – EXEMPT AND COMPLYING DEVELOPMENT

Provides a more efficient and effective process for certain classes of development. The Policy is an essential part of the reforms introduced to the development assessment system in July, 1998. It applies to areas of the State where there are no such provisions in the Council's local plans.

STATE ENVIRONMENTAL PLANNING POLICY No. 64 – ADVERTISING AND SIGNAGE

Aims to improve the amenity of urban and natural settings by managing the impact of outdoor advertising. The policy responds to growing concerns from the community, the advertising industry and local government that existing controls and guidelines were not effective. SEPP No, 64 offers the comprehensive provisions and consistent approach needed.

ANNEXURE "A" CONT

STATE ENVIRONMENTAL PLANNING POLICY No. 65 – DESIGN QUALITY OF RESIDENTIAL FLAT DEVELOPMENT

Raises the design quality of residential flat development across the state through the application of a series of design principles. Provides for the establishment of Design Review Panels to provide independent expert advice to Councils on the merit of residential flat development. The accompanying regulation requires the involvement of a qualified designer throughout the design, approval and construction stages

STATE ENVIRONMENTAL PLANNING POLICY (BUILDING SUSTAINABILITY INDEX: BASIX 2004)

This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP No. 1 does not apply in relation to any development standard arising under BASIX.

PLEASE NOTE: Pursuant to the Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004, fulfilment of BASIX commitments does not take effect in the Lithgow City Council area until on and from 1 July 2005.

STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

- The aim of this Policy is to facilitate the effective delivery of infrastructure across the State by:
- (a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and
- (b) providing greater flexibility in the location of infrastructure and service facilities, and
- (c) allowing for the efficient development, redevelopment or disposal of surplus government owned land, and
- (d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and
- (e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and
- (f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

STATE ENVIRONMENTAL PLANNING POLICY (RURAL LANDS) 2008

The aims of this Policy are as follows:

- (a) to facilitate the orderly and economic use and development of rural lands for rural and related purposes,
- (b) to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,
- (c) to implement measures designed to reduce land use conflicts,
- (d) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,
- (c) to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.

STATE ENVIRONMENTAL PLANNING POLICY (TEMPORARY STRUCTURES AND PLACES OF PUBLIC ENTERTAINMENT) 2007

- The aims of this Policy are as follows:
- (a) to ensure that suitable provision is made for ensuring the safety of persons using temporary structures or places of public entertainment,
- (b) to encourage the protection of the environment at the location, and in the vicinity, of places of public entertainment or temporary structures by (among other things) managing noise, parking and traffic impacts and ensuring heritage protection,
- (c) to specify the circumstances in which the crection and use of temporary structures are complying development or exempt development,
- (d) to promote opportunities for buildings (including temporary structures) to be used as places of public entertainment by specifying the circumstances in which that use is complying development or exempt development,
- (c) to promote the creation of jobs in the public entertainment industry,
- (f) to increase access for members of the public to public entertainment.

STATE ENVIRONMENTAL PLANNING POLICY (HOUSING FOR SENIORS OR PEOPLE WITH A DISABILITY) 2004

Encourage the development of high quality accommodation for ageing population and for people who have disabilities – housing that is in keeping with the local neighbourhood.

ANNEXURE "A" CONT

STATE ENVIRONMENTAL PLANNING POLICY (MAJOR PROJECTS) 2005

The aims of this Policy are as follows;

- (a) to identify development to which the development assessment and approval process under Part 3A of the Act applies,
- (b) to identify any such development that is a critical infrastructure project for the purposes of Part 3A of the Act,
- (c) to facilitate the development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State so as to facilitate the orderly use, development or conservation of those State significant sites for the benefit of the State,
- (d) to facilitate service delivery outcomes for a range of public services and to provide for the development of major sites for a public purpose or redevelopment of major sites no longer appropriate or suitable for public purposes.
- (e) to rationalise and clarify the provisions making the Minister the approval authority for development and sites of State significance, and to keep those provisions under review so that the approval process is devolved to councils when State planning objectives have been achieved.

STATE ENVIRONMENTAL PLANNING POLICY (MINING, PETROLEUM PRODUCTION AND EXTRACTIVE INDUSTRIES) 2007

The aims of this Policy are, in recognition of the importance to New South Wales of mining, petroleum production and extractive industries: (a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and(b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and(c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources.

STATE ENVIRONMENTAL PLANNING POLICY (STATE SIGNIFICANT DEVELOPMENT) 2005

The aims of this Policy are as follows:

- (a) to identify development of economic, social or environmental significance to the State or regions of the State so as to provide a consistent and comprehensive assessment and decision making process for that development,
- (b) to facilitate the development, redevelopment or protection of important urban, coastal and regional sites of economic, environmental or social significance to the State so as to facilitate the orderly use, development or conservation of those State significant sites for the benefit of the State,
- (c) to facilitate service delivery outcomes for a range of public services and to provide for the development of major sites for a public purpose or redevelopment of major sites no longer appropriate or suitable for public purposes,
- (d) to rationalise and clarify the provisions making the Minister the consent authority for State significant development and State significant sites and to keep those provisions under review so that the consent powers are devolved to councils when the State planning objectives have been achieved.

THE FOLLOWING DRAFT STATE ENVIRONMENTAL PLANNING POLICY APPLIES TO THE LAND: DRAFT STATE ENVIRONMENTAL PLANNING POLICY (APPLICATION OF DEVELOPMENT STANDARDS) 2004

Currently SEPP No. I provides local councils with flexibility in applying development standards. The Department, in consultation with councils and the community, has undertaken a comprehensive review of how SEPP No. 1 has been used over the past 20 years. This review has led to a new draft policy that provides clearer and tighter criteria that development applicants must meet if they wish to vary from a development standard. The aim is to have the flexibility to achieve better planning outcomes. Once gazetted, the policy replaces SEPP No. 1.

THE FOLLOWING REGIONAL PLAN APPLIES TO LAND WITHIN THE DRINKING WATER **CATCHMENTS OF SYDNEY:**

DRINKING WATER CATCHMENT REGIONAL ENVIRONMENTAL PLAN NO. 1 (REP NO.1)

- This plan aims:
- to create healthy water catchments that will deliver high quality water while sustaining diverse and prosperous a) communities; and
- b) to provide the statutory components in Sustaining the Catchments that together with the non-statutory components in Sustaining the Catchments, will achieve the aim set out in paragraph (a); and
- to achieve the water quality management goals of: c)
 - i) improving water quality in degraded areas and critical locations where water quality is not suitable for the relevant environmental values; and
 - ii) maintaining or improving water quality where it is currently suitable for the relevant environmental values,

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ANNEXURE "B"

Clause 29 Part 3 Division 3	Environmental Planning and Assessment (Savings and Transitional) Regulation 1998 Provisions arising from amendment of Environmental Planning and Assessment Act 1979
Division 3 General	
29 Certain activities	s require development consent under amended EP&A Act 1979
 (a) prescribed acti (b) the subdivision an existing use (2) This clause does not support the support of the support of	to development consisting of: ivity proposed to be carried out within the area of a council, or n of land within the area of a council, including development proposed to be carried out in connection with c, but not including development referred to in subclause (2). ot apply to development of the kind referred to in subclause (1) that consists of:
unamended LC (b) any prescribed	at, immediately before the appointed day, was specified in item 6 of Part A of the Table to section 68 of the F Act 1993 (relating to the use and occupation of uncompleted buildings), or I activity (other than an activity referred to in paragraph (a)) that, immediately before the appointed day, was cluded or suspended from the requirement for approval under the unamended LG Act 1993:
(i) by the Lo (ii) by a loca force at t	bcal Government (Approvals) Regulation 1993, as in force immediately before the appointed day, or al approvals policy in force under the unamended LG Act 1993 (being a local approvals policy that is still in the time the development application for development consent is made), or
referred	der the provisions of any Act, including the provisions of an environmental planning instrument of a kind to in section 28 of the unamended EP&A Act 1979, or
under the repo environmental (d) any developme	
(ii) carried section 1	out by the Crown, or out by any person prescribed by the regulations under the amended EP&A Act 1979 for the purposes of 115M of that Act (as referred to in section 115H (a) of that Act) in relation to Crown building work, being
developr (c) any prohibited	nent that constitutes an activity within the meaning of Part 5 of that Act, or
(f) any developm environmental made before o preparation bet 1 October 1998	nent for which development consent was required, immediately before the appointed day, by an planning instrument or that is required by any new provisions of an environmental planning instrument r on the appointed day, or, in the case of an environmental planning instrument that was in the course of fore the appointed day but not made before or on the appointed day, made after the appointed day and before 8, or
(g) any activity w (i) in respec	vithin the meaning of Part 5 of the Act: It of which an application for approval to a determining authority within the meaning of that Part has been
made, bu	t not finally determined, immediately before the appointed day, or
commen	as approved by a determining authority within the meaning of that Part before the appointed day and that ces pursuant to that approval not later than 3 years after the appointed day. which this clause applies may not be carried out except with development consent.
(4) Development cons	sent may not be granted in relation to development for a prescribed activity that involves the erection of a requirements of Division 4 of Part 1 of Chapter 7 of the unamended LG Act 1993 have been complied
(5) The requirements requirements appli	relating to the notification of proposed development under the amended EP&A Act 1979 (including any ed by clause 32 (1)) do not apply to a development application for development for which the requirements lause (4) are required to be complied with.
(6) Subclauses (4) and	(5) apply only if a local approvals policy (being a local approvals policy with respect to the notification of pprovals) is in force under the unamended LG Act 1993 at the time the development application for
(7) This clause has ef	fect despite the existing provisions of any environmental planning instrument made before the appointed to any new provisions of an environmental planning instrument made before, on or after the appointed day.
(8) The consent author	rity for the purposes of development to which this clause applies is the council unless, by or under the Act, is the consent authority for the purposes of that development.
(9) Despite Part 9 of which this clause	the amended EP&A Regulation 1994, the fee for an application to carry out development of the kind to applies, being the erection of a building within the meaning of the unamended LG Act 1993, is the fee ordance with an order under clause 33.
	n means a provision made before the appointed day.
	ans a provision made on or after the appointed day. s to have effect on 1 July 2000.

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ANNEXURE "D"

SECTION 149(5) ADVICE

(a)	Is the land affected by a Tree Preservation Order?	Council has adopted a Tree Preservation Order for public lands only. See attached Tree Preservation Order.
(b)	Has any development consent with respect to the land been granted within the previous five years?	NO

LITHGOW CITY COUNCIL Tree Preservation Order

- a) The Council of the City of Lithgow, for the purpose of preserving existing amenity and protection of the natural environment, hereby makes a Tree Preservation Order pursuant to the provisions of the Environmental Planning Assessment Act 1979.
- b) This Tree Preservation Order prohibits the ringbarking, cutting down, lopping, topping, removal or any other activity that may result in the demise of any tree situated on public property, including the application of herbicides, transplanting and/or pruning, without the prior written consent of Council. Public property shall include all Council owned land including parks, reserves and road reserves, land owned by the Crown, any Government Authority or State owned Corporation but excluding any specific exemptions under the Environmental Planning and Assessment Model Provisions or any other Act.
- c) This Tree Preservation Order relates to all trees on public land with a height of greater than four metres and a spread of greater than three metres or a trunk circumference of greater than 300mm measured at one metre above the ground. This Order applies to all trees and categories of trees which do not come under the jurisdictions of other acts.
- d) Any trees approved by Council for removal under this Order shall be replaced by at least one other tree of reasonable size which shall be maintained until it is mature. This condition may not apply where Council deems that such action is inappropriate.
- e) Any person who contravenes or causes or permits to be contravened the provisions of this Tree Preservation Order shall be guilty of an offence and liable to prosecution.

May 1997 (amended March 2000)

	PHASE 1 ENVIRONMENTAL SITE ASSESSMENT PORTLAND CEMENT WORKS
Appendix C	Groundwater Bores



Portland

Map created with NSW Natural Resource Atlas - http://nratlas.nsw.gov.au Wednesday, October 22, 2008



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Legend

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Symbol	Layer	Custodian
o	Cities and large towns renderImage: Cannot build image from features	
Convat	Populated places renderImage: Cannot build image from features	
0	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
\sim	Major rivers	

Topographic base map

22/10/2008

12 Km



Copyright © 2008 New South Wales Government. Map has been compiled from various sources and may contain errors or omissions. No representation is made as to its accuracy or suitability.

Print Report

Groundwater Works Summary

For information on the meaning of fields please see <u>Glossary</u> Document Generated on Wednesday, October 22, 2008

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW053598

Works Details (top)

GROUNDWATER NUM	MBFR	GW053598
LIC-NUM		80BL120696
AUTHORISED-PURPO	OSES	
INTENDED-PURPOSE		POWER GENERATION
WORK-TYPE		Excavation
WORK-STATUS		Other
CONSTRUCTION-MET	гнор	
OWNER-TYPE		Other Govt
COMMENCE-DATE		
COMPLETION-DATE		1981-06-01
FINAL-DEPTH (metres	5)	60.00
DRILLED-DEPTH (met	•	0.00
CONTRACTOR-NAME	•	
DRILLER-NAME		
PROPERTY		N/A
GWMA		- LOWER MURRAY (D/S COROWA)
GW-ZONE		- MURRAY - CALIVIL RENMARK
STANDING-WATER-LI	EVEL	
SALINITY		
SALINITY YIELD		
YIELD	80 - 1	MACQUARIE-WESTERN
YIELD Site Details (top)		MACQUARIE-WESTERN MACQUARIE RIVER
YIELD Site Details <u>(top)</u> REGION		
YIELD Site Details <u>(top)</u> REGION RIVER-BASIN		MACQUARIE RIVER
YIELD Site Details <u>(top)</u> REGION RIVER-BASIN AREA-DISTRICT	421 -	MACQUARIE RIVER
YIELD Site Details <u>(top)</u> REGION RIVER-BASIN AREA-DISTRICT CMA-MAP	421 - 8831	MACQUARIE RIVER -2N
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE	421 - 8831 55/3	MACQUARIE RIVER -2N
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE	421 - 8831 55/3 1:25,	MACQUARIE RIVER -2N 000
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION	421 - 8831 55/3 1:25, (Unki	MACQUARIE RIVER -2N 000
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE	421 - 8831 55/3 1:25, (Unki 6305	MACQUARIE RIVER -2N 000 nown)
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE NORTHING	421 - 8831 55/3 1:25, (Unki 6305	MACQUARIE RIVER -2N 000 nown) 818.00 16.00
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE NORTHING EASTING	421 - 8831 55/3 1:25, (Unkr 6305 7770 33 21	MACQUARIE RIVER -2N 000 nown) 818.00 16.00

AMG-ZONE55COORD-SOURCEGD.,ACC.MAPREMARK

Form-A (top)

COUNTY	ROXBURGH
PARISH	CULLEN BULLEN
PORTION-LOT-DP	99999

Licensed (top)

COUNTY	ROXBURGH
PARISH	CULLEN BULLEN
PORTION-LOT-DP	PORTLAND TOWNSHIP

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

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Print Report

Groundwater Works Summary

For information on the meaning of fields please see <u>Glossary</u> Document Generated on Wednesday, October 22, 2008

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW056349

Works Details (top)

GROUNDWATER NUM	BER GW056349
LIC-NUM	80BL121525
AUTHORISED-PURPOS	SES DOMESTIC
INTENDED-PURPOSES	DOMESTIC
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METH	IOD Rotary Air
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	1981-09-01
FINAL-DEPTH (metres)	36.60
DRILLED-DEPTH (metro	es) 36.60
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- LOWER MURRAY (D/S COROWA)
GW-ZONE	- MURRAY - CALIVIL RENMARK
STANDING-WATER-LEV	VEL
SALINITY	
SALINITY YIELD	
YIELD	-
YIELD Site Details (top)	30 - MACQUARIE-WESTERN
YIELD Site Details <u>(top)</u> REGION 8	
YIELD Site Details <u>(top)</u> REGION 8	30 - MACQUARIE-WESTERN
YIELD Site Details (top) REGION & RIVER-BASIN 4 AREA-DISTRICT	30 - MACQUARIE-WESTERN
YIELD Site Details (top) REGION & RIVER-BASIN 4 AREA-DISTRICT CMA-MAP &	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER
YIELD Site Details (top) REGION & RIVER-BASIN 4 AREA-DISTRICT CMA-MAP & GRID-ZONE 5	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N
YIELD Site Details (top) REGION & RIVER-BASIN 4 AREA-DISTRICT CMA-MAP & GRID-ZONE 5	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N 55/3
YIELDSite Details (top)REGIONRIVER-BASINAREA-DISTRICTCMA-MAPGRID-ZONESCALE	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N 55/3 1:25,000
YIELDSite Details (top)REGIONREGIONRIVER-BASINAREA-DISTRICTCMA-MAPGRID-ZONESCALEELEVATIONELEVATION-SOURCE	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N 55/3 1:25,000
YIELDSite Details (top)REGION8RIVER-BASIN4AREA-DISTRICT4CMA-MAP8GRID-ZONE5SCALE1ELEVATION6SORTHING6	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N 55/3 1:25,000 Unknown)
YIELDSite Details (top)REGIONREGIONRIVER-BASINAREA-DISTRICTCMA-MAPGRID-ZONESCALEELEVATIONELEVATION-SOURCECNORTHINGEASTING	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N 55/3 1:25,000 Unknown) 3304951.00
YIELDSite Details (top)REGION8RIVER-BASIN4AREA-DISTRICT4CMA-MAP8GRID-ZONE5SCALE1ELEVATION6ELEVATION-SOURCE6EASTING7LATITUDE3	30 - MACQUARIE-WESTERN 421 - MACQUARIE RIVER 3831-2N 55/3 1:25,000 Unknown) 5304951.00 777146.00

Page 2 of 2

AMG-ZONE55COORD-SOURCEGD.,ACC.MAPREMARKFrank

Form-A (top)

COUNTY	ROXBURGH
PARISH	CULLEN BULLEN
PORTION-LOT-DP	L6 (SEC 58)

Licensed (top)

COUNTY	ROXBURGH
PARISH	CULLEN BULLEN
PORTION-LOT-DP	L6

Water Bearing Zones (top)

no details

Drillers Log (top)

FROM	то	THICKNESS	DESC	GEO-MATERIAL COMMENT
0.00	0.60	0.60	Topsoil	
0.60	7.30	6.70	Clay	
7.30	13.70	6.40	Sandstone Weathered	
13.70	30.50	16.80	Limestone	
30.50	36.60	6.10	Granite	

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Print Report

Groundwater Works Summary

For information on the meaning of fields please see <u>Glossary</u> Document Generated on Wednesday, October 22, 2008

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW003756

Works Details (top)

GROUNDWATER NUMBER GW003756 LIC-NUM **AUTHORISED-PURPOSES INTENDED-PURPOSES** PUBLIC/MUNICIPL WORK-TYPE Bore WORK-STATUS (Unknown) **CONSTRUCTION-METHOD** Cable Tool **OWNER-TYPE** P.W.D. COMMENCE-DATE **COMPLETION-DATE** 1940-12-01 FINAL-DEPTH (metres) 55.20 DRILLED-DEPTH (metres) 55.20 CONTRACTOR-NAME **DRILLER-NAME** PROPERTY **GWMA GW-ZONE** STANDING-WATER-LEVEL SALINITY YIELD

Site Details (top)

REGION	80 - MACQUARIE-WESTERN
RIVER-BASIN	421 - MACQUARIE RIVER
AREA-DISTRICT	
CMA-MAP	8831-2N
GRID-ZONE	55/3
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6305690.00
EASTING	776106.00
LATITUDE	33 21' 9"
LONGITUDE	149 58' 1"
GS-MAP	0057D2

Page 2 of 3

AMG-ZONE55COORD-SOURCEPR.,ACC.MAPREMARKFrank

Form-A (top)

COUNTYROXBURGHPARISHCULLEN BULLENPORTION-LOT-DP99999

Licensed (top)

no details

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter; ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
	1	Casing	Threaded Steel			203			(Unknown)

Water Bearing Zones (top)

FROM- DEPTH (metres)	TO- DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S-W-D LLL	- YIELD	TEST- HOLE- DEPTH (metres)	DURATION SALINITY
8.50	11.50	3.00	Fractured	11.60	0.38		(Unknown)
20.10	21.30	1.20	Fractured	8.80	2.37		(Unknown)

Drillers Log (top)

FROM	то	THICKNESS	DESC	GEO-MATERIAL COMMENT
0.00	2.74	2.74	Clay	
2.74	8.53	5.79	Rock Yellow	
8.53	11.58	3.05	Rock Grey Some Hard Seams Water Supply	
11.58	14.94	3.36	Quartz	
14.94	16.15	1.21	Rock Slate	
16.15	18.29	2.14	Rock Hard	
18.29	19.51	1.22	Rock	
19.51	21.34	1.83	Limestone Water Supply	
21.34	24.99	3.65	Rock	
24.99	28.35	3.36	Rock Seams	
28.35	29.26	0.91	Rock	
29.26	31.09	1.83	Rock	
31.09	32.00	0.91	Rock	
31.09	32.00	0.91	Quartz Very Seamy	

32.00	32.61 0.61	Driller
32.61	33.53 0.92	Rock Slate
33.53	35.05 1.52	Slate
35.05	36.27 1.22	Rock Broken
36.27	39.93 3.66	Slate Hard
39.93	43.89 3.96	Rock Grey
43.89	49.68 5.79	Rock Hard
43.89	49.68 5.79	Some Seams
49.68	55.17 5.49	Rock Hard

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Groundwater Works Summary

For information on the meaning of fields please see <u>Glossary</u> Document Generated on Wednesday, October 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW057387

Works Details (top)

GROUNDWATER NUN LIC-NUM AUTHORISED-PURPO	SES	80BL125308 DOMESTIC STOCK
INTENDED-PURPOSE	3	NOT KNOWN
WORK-TYPE		Bore open thru rock
WORK-STATUS		(Unknown)
CONSTRUCTION-MET	HOD	•
OWNER-TYPE		Private
COMMENCE-DATE		1000.00.01
COMPLETION-DATE		1983-03-01
FINAL-DEPTH (metres	•	
DRILLED-DEPTH (met	res)	45.70
CONTRACTOR-NAME		
DRILLER-NAME		
PROPERTY		N/A
GWMA		- LOWER MURRAY (D/S COROWA)
GW-ZONE		- MURRAY - CALIVIL RENMARK
STANDING-WATER-LE	EVEL	
SALINITY		
SALINITY YIELD		
YIELD	80 - 1	MACQUARIE-WESTERN
YIELD Site Details <u>(top)</u>		MACQUARIE-WESTERN MACQUARIE RIVER
YIELD Site Details <u>(top)</u> REGION		
YIELD Site Details <u>(top)</u> REGION RIVER-BASIN		MACQUARIE RIVER
YIELD Site Details <u>(top)</u> REGION RIVER-BASIN AREA-DISTRICT	421 -	MACQUARIE RIVER
YIELD Site Details <u>(top)</u> REGION RIVER-BASIN AREA-DISTRICT CMA-MAP	421 - 8831-	MACQUARIE RIVER -2N
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE	421 - 8831- 55/3	MACQUARIE RIVER -2N
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE	421 - 8831 55/3 1:25,0	MACQUARIE RIVER -2N 000
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE	421 - 8831 55/3 1:25,0 (Unkr	MACQUARIE RIVER -2N 000
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE	421 - 8831 55/3 1:25,0 (Unkr 6304	MACQUARIE RIVER -2N 000 nown)
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE NORTHING	421 - 8831 55/3 1:25,0 (Unkr 6304	MACQUARIE RIVER -2N 000 nown) 967.00 77.00
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION-SOURCE NORTHING EASTING	421 - 8831 55/3 1:25, (Unkr 6304 7765 33 21	MACQUARIE RIVER -2N 000 nown) 967.00 77.00
YIELD Site Details (top) REGION RIVER-BASIN AREA-DISTRICT CMA-MAP GRID-ZONE SCALE ELEVATION ELEVATION ELEVATION-SOURCE NORTHING EASTING LATITUDE	421 - 8831 55/3 1:25, (Unkr 6304 7765 33 21	MACQUARIE RIVER -2N 000 nown) 967.00 77.00 ' 32" 58' 20"

AMG-ZONE55COORD-SOURCEGD.,ACC.MAPREMARKFiller

Form-A (top)

COUNTY	ROXBURGH
PARISH	CULLEN BULLEN
PORTION-LOT-DP	L2 DP627940 (140)

Licensed (top)

COUNTY	ROXBURGH
PARISH	CULLEN BULLEN
PORTION-LOT-DP	2 627940

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter; ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	Welded Steel	-0.30	3.70	160			(Unknown)

Water Bearing Zones (top)

FROM- DEPTH (metres)	TO- DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S-W-D- LLL	TEST- HOLE- DEPTH (metres)	DURATION SALINITY
21.30	21.60	0.30	Fractured	15.20	0.13	(Unknown)
32.00	32.30	0.30	Fractured	15.20	0.13	(Unknown)
42.70	43.00	0.30	Fractured	15.20	0.06	(Unknown)

Drillers Log (top)

FROM	1 ТО	THICKNESS	DESC	GEO-MATERIAL COMMENT
0.00	0.30	0.30	Topsoil	
0.30	3.70	3.40	Clay	
3.70	45.70	42.00	Shale Water Supply	

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	PHASE 1 ENVIRONMENTAL SITE ASSESSMENT PORTLAND CEMENT WORKS
Appendix D	NSW EPA Notices









Site and notice details

Your search for: Suburb: Portland

2 notices on 1 site were matched.

	and a second						
Area No: 3118							
The information below was correct at the time the notices were issued.							
Sita, Plua Circla S	outhorn Comont						
Site: Blue Circle Southern Cement							
Address: Williwa Street, Portland, 2847							
LGA: Lithgow City Council							
Occupier: Blue Circle Southern Cement Ltd							
Owner: Blue Circle Southern Cement Ltd							
	Lot 2 DP						
Lot 1 DP 109595	749903	Lot 3 DP 749905	Lot 4 DP 7	49906	Lot 5 DP 749907		
Lot 6 DP 749908	Lot 7 DP Lot 104 DP		Lot 174 DP		Lot 52,53 DP		
	749909	755769	755769		755769		
Lot 24/46 DP	Lot 1 DP						
758855	842890						
Notices velating 4	e this site (0 su						
Notices relating to this site (0 current and 2 former) (Map) where available, maps show the part of the site affected by the notice							
	(Map) where av	allable, maps slow	•		articled by the notice		
-	Notice type & n	umber	Status	Date			
Blue Circle	Revocation Notice	* 528	Former	Issued	l 06 Oct 1999		
Southern Cement Ltd							
Blue Circle	Investigation Orde	er∗ 410	Former	Iccurd	17 Aug 1995		
Southern Cement		CI ~ 410	FUHIEI		ed 06 Oct 1995		
Ltd							
					22 Ostalau 2000		

22 October 2008
CERTIFIED MAIL Blue Circle Southern Cement Ltd P O BOX 42 WENTWORTHVI LLE NSW 2145

Our Reference: 260141/D1/ Not. Nos. 002046

Your Reference: UBL # 3118; Notice # 410

17 AUG1995

NOTICE UNDER SECTION 35 OF THE ENVIRONMENTALLY HAZARDOUS CHEMICALS ACT 1985

WHEREAS -

- A. Blue Circle Southern Cement Limited (BCSC) is the occupier of premises at Williwa Street Portland more fully described in the Schedule and known as Portland Cement Works (the 'premises').
- B. The Environment Protection Authority (EPA) has reasonable grounds to believe that soil and water on the premises are contaminated with heavy metals and may be contaminated with polycyclic aromatic hydrocarbons (PAHs) as a consequence of cement manufacturing and associated operations on the premises.

In accordance with the powers vested in the EPA by the provisions of Part 5 of the Environmentally Hazardous Chemicals Act 1985 and section 35 in particular, the EPA directs BCSC to:

- 1. Prepare and submit to the EPA by 17 October 1995 a draft sampling and analysis protocol. The draft protocol should be prepared by suitably qualified persons and include a proposed timetable not extending beyond 17 January 1996 for sampling and analysis of waters, soil and sediment and carrying out a hydrological study over the whole premises in the manner described in this notice:
 - all sampling and analysis must be carried out in accordance with:(i) "Test Methods for Evaluating Solid Waste" (SW-836), 4th Edition (1992), Office of Solid Waste and Emergency Response, USEPA, or a NATA endorsed complementary method; or (ii) "Standard Methods for Analysis of Water and Wastewater" American Public Health Association (APHA), 18th Edition (1992).

2. Upon approval by the EPA and in accordance with the draft protocol as amended, if relevant, collect samples of water, soil and sediment from all surface waters, the floor sediments of all water filled quarries and storages, and all fly ash handling and storage areas on the premises. Samples must be taken prior to any removal of surface or subsurface contamination. The samples shall be analysed for a range of organic and inorganic species. The analysis shall include a full range of metal species, PAHs, organochlorines and total phenolic compounds.

- 3. Submit to the EPA by 17 January 1996 one or more reports:
 - (a) detailing the dates and locations of all sampling, the results of the analyses and their interpretation; and
 - (b) indicating the relationships between groundwater, the water currently in the quarries, and surface waters.
- 4. Prepare and submit to the EPA by 17 January 1996 a draft remediation plan, including consideration of on-going monitoring both on and off-site.
- 5. The EPA must be notified in writing at least 2 months prior to any dealings or proposed dealings affecting the land title to the premises or the tenure of BCSC, including with regard to the renewal, transfer or request for cancellation of any authority under the Mining Act 1992.

Note: If you neglect or fail to comply with this notice, you may be prosecuted for breaching section 35(1) of the Environmentally Hazardous Chemical Act.

NEIL SHEPHERD Director General

(signed 17/08/1995)

per RICHARD WHYTE REGIONAL MANAGER CENTRAL WEST (By Authorisation)

cc Greater Lithgow City Council and Department of Mineral Resources

SCHEDULE

Land including:

Lot 1 DP 842890 Lot 2 DP 749903 Lot 3 DP 749905 Lot 4 DP 749906 Lot 5 DP 749907 Lot 6 DP 749908 Lot 7 DP 749909 Lot 1 DP 109595 lot 24 Sec 46 DP 758855 Por 53 Por 104 Por 174 Part Por 52 PO 57/15 PO 79/3 ML 195 ML 411 ML 804 PLL 1132 ML 2806 ML 2851 ML 2906 ML 2941 ML 5673 PLL 953 ML 410 MPL 1098 ML 3263 PLL 3576 ML 306 MPL 393 ML 2949 ML 3177 ML 3208 ML 3209 ML 2851

Cement, including with regard to the renewal, transfer or request for cancellation of any authority under the Mining Act 1992.

SCHEDULE Land including: Lot 1 DP 842890 Lot 2 DP 749903 Lot 3 DP 749905 Lot 4 DP 749906 Lot 5 DP 749907 Lot 6 DP 749908 Lot 7 DP 749909 Lot 1 DP 109595 Lot 24 sec 46 DP 758855 por 53 por 104 por 174 part por 52 PO 57/15 PO 79/3 ML 195 ML 411 ML 804 PLL 1132 ML 2806 ML 2851 ML 2906 ML 2941 ML 5673 PLL 953 ML 410 MPL 1098 ML 3263 PLL 3576 ML 306 **MPL 393** ML 2949 ML 3177 ML 3208 ML 3209 ML 2851

REGISTERED MAIL General Manager Blue Circle Southern Cement Ltd Powers Road SEVEN HILLS NSW 2147

CHF32386/CH4775 Notice Number 528

ENVIRONMENTALLY HAZARDOUS CHEMICALS ACT, 1985 NOTICE UNDER SECTION 35

WHEREAS:-

- A: Blue Circle Southern Cement Ltd (ACN 008 421 761) is the occupier of the premises located at Williwa Street, Portland, more fully described in the Schedule and known as Portland Cement Works (the 'premises').
- B. The premises were deemed to be contaminated with heavy metals and polycyclic aromatic hydrocarbons (PAHs) in soils and waters, as a consequence of cement manufacturing and associated operations on the premises.
- C. Notice number 410 pursuant to Section 35 of the Environmentally Hazardous Chemicals Act 1985 was served on Blue Circle Southern Cement Ltd, the occupier of the premises, on 17 August 1995. The notice specified requirements for the investigation of soil, water and sediment contamination, and the subsequent preparation of a draft remediation plan.
- D. All the conditions of Notice No. 410 have been complied with.

TAKE NOTE THAT:-

In accordance with the powers vested in the Environment Protection Authority (EPA) by the provisions of Section 35 of the Environmentally Hazardous Chemicals Act 1985, the EPA hereby revokes Notice number 410 dated 17 August 1995.

NEIL SHEPHERD Director-General

(signed 6 Oct 1999)

CATHY DYER Manager Contaminated Sites (by delegation)

cc. EPA CLM Act record EPA Regional Manager Central West Lithgow City Council

NOTE:

The EPA must be notified in writing at least two months prior to any dealings or proposed dealings affecting the land title to the premises or the tenure of Blue Circle Southern

	PHASE 1 ENVIRONMENTAL SITE ASSESSMENT PORTLAND CEMENT WORKS
A remained in a	Analytical Laboratory Report and Data Validation

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URS

Analytical Data Validation Form

Project Name:	BCSC Portland P1 ESA	Project/Task Number:	43177139.00000
Analytical Laboratory:	ALS	Batch/Ref. Number(s):	ES0816123
Date Sampled:	31/10/2008	Sample Type:	Solid
Sample Handling, Receip	t and Holding Times	Yes/No	Comments
COC completed adequately		Yes	
Samples received intact and	chilled	Yes	Sample Temperature 6.4 °C
Samples analysed within ap	propriate holding times per analytical methods	Yes	
# of Primary Samples 3	# of QAQC Samples 0	# of Duplicate Samples 0	# of Triplicate Samples 0
Blanks Method Blank (MB), Rinsa	ate Blank (RB), Trip Blank (TB), Field Blar	nk (FB)	
Type		Comments	
MB	All Bla	nks acceptable. Results less than the limit	of reporting
	+		
Laboratory Control Samp	les (LCS)		
Analyte		Comments	
	Acceptable. All la	aboratory control sample recoveries were	within the control limits
Matrix Spike (MS)			
Analyte		Comments	
	Acce	ptable. All matrix spikes were within the co	ntrol limits
Trip Spike /Control Trip S	nike		
Analyte	% R	Comments	
Not Conducted			
Duplicates			
Laboratory Duplicates		Comments	
	Acceptabl	e. Laboratory duplicate RPDs were within t	the control limits
Intra-Laboratory Duplicates		Comments	
not conducted			
Inter-Laboratory Duplicates		Comments	
not conducted			
Surrogate Monitoring Con	mpound Analyses		
Analyte		Comments	
	Accepta	able. Surrogate recoveries were within the	control limits.
	(Overall Comments	
The analytical d	lata evaluation has not highlighted any exce	edences in quality control. The results are	therefore considered fit for reporting.
Notes: %R = Percent Recovery, RPD = F	Relative Percent Difference, LOR = Limit of Reporting alyte in terms of all the data validation variables and o		·
Performed By: Date:	T. Onus 19-Nov-08	Reviewed By: Date:	S. Bourne 20-Nov-08

				CHAIN OF CUSIOUT FORM						5		
THIS COLUMN FOR LAB USE ONLY	FROM:			DATE:	Ü			U	container Size	Container Size, Type, Preservative		
	URS (AUSTRAI	(N)			ALS Smithfield				Containe	Container Identification		
Job Code:	ACN.000 691 690 North Svdnev	8			Woodpark Road Smithfield 2164	Size						
	Level 3 116 Miller Street	er Street				Type*						
	Ph: 8925 5500			Fax: 8925 5555		Preservative Code						
Due Date:	Project No: 43177139 Project Manager:			Sampler(s): Tom Onus 04000665 517 Signature(s):								
	Penny Baker Agreement No:			7	0	Analytes						
Custody seal intact?		RS by:	Overs	$\nabla ARADA$	boratory by: b. L C		8 - :					
ซึi	Date: 3/11/08 Time:	Time	9:00	Date:	3; 20 0° M		sletaM	sHAq			ногр	
Ē	Date Time	ne Matrix	Xi	Sample Number	Comments	Total no	iired an	lytes				
1	31/10/2008 11:00	00:	solid	SP01_31/10/08			×	-				
2	31/10/2008 11:00	00.	solid	SP02_31/10/08			×					
3	31/10/2008 11	11:00	solid	SP03_31/10/08			×	×				
										Work Order		
										FS0816123		
										Telephone:+61-2-8784 8555		
Remarks:										-		
					TOTAL							
	* Container Type Preserved Vial;	e and Pre VS = Sulfi	servative Codes: uric	: P = Neutral Plastic; N = Nitric Acid Preser	ved; C = Sodium Hydroxide Preser	ved; J = Solvi	ent Washed Acid I	Rinsed Jar; S = {	Solvent Washe	* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Viai; VS = Sulfuric	Acid	
Courier Job No:	Specify Turnar Piease email rep	ound Tirr port to: Th	Specify Turnaround Time: Please email report to: Thomas_Onus@urscorp.com	rscorp.com				NOTE: SAMP AND H	LES MAY CO	NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES		
-	: ; ;											
Cham of C	Chain of Custody - Unca Bio trials	200										

ļ			CHAIN	CHAIN OF CUSTODY FORM	1 11.00	S			Sheet of		
OLUMN .								Contain	Container Size, Type, Preservative		
AP 45E ONLY	FROM: LIPS (ALISTRALIA)		DATE:		TO: ALS Smithfield			0	and Analysis Container Identification		
ode:	ACN 000 691 690 North Sydney Level 3 116 Miller Street	Ť			Woodpark Road Smithfield 2164	Size Type*					
ate:	Ph: 8925 5500 Project No: 43177139 Project Manager: Penny Baker		Fax: 8925 5555 Sampler(s): Tom O Signature(s):	Fax: 8925 5555 Sampler(s): Tom Onus Judg 866 517 Signature(s):	0	Analytes					
dy seal intact? S NO mple cold?	dy seal intact? Released for URS by: S NO mple cold? Date: 3 11 0 % Time:	T. Ours Time: 9:00		SARADD 03 - 11 - 08 35 4	oratory by: b・イじ る。ao Time:		8 - elsteM	2HA9			ногр
Į	Date Time Matrix	Matrix	Sample Number	nber	Comments	Total no	Tick required analytes	nalytes			}
	8	solid	SP01_31/10/08	V08			×				-
2	31/10/2008 11:00	solid	SP02_31/10/08	V08			×	×			
~	31/10/2008 11:00	solid	SP03_31/10/08	/08			×	×			
									 Environmental Division 	tal Division	
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									- Telephone : +61-2-8784 8555	1-2-8784 8555	
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arks:					1014	AL					
	* Container Type and Preserved Vial: VS =	d Preservative Code: • Sulfuric	s: P = Neutral	* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Prese Preserved Vial; VS = Suffuric	Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S	erved; J = Solv	ent Washed A	id Rinsed Jar; S = Solver	= Solvent Washed Acid Rinsed Glass Bottle, VC = Hydrochlonc Acid	Bottle; VC = Hydroc	lloric Acid
ier Job No:	Specify Turnaround Time: Please email report to: Thomas_Onus@urscorp.com	d Time: to: Thomas_Onus@t	urscorp.com					NOTE: SAMPLES	NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES	5	
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		CERTIFIC	CERTIFICATE OF ANALYSIS		
Work Order	: ES0816123		Page	: 1 of 5	
Client Contact Address	: URS AUSTRALIA (NSW) PTY LTD : MR TOM ONUS : LEVEL 3, 116 MILLER STREET NORTH SYDNEV NSW AUSTRALIA 2060	JTY LTD REET LISTRALIA 2060	Laboratory Contact Address	: Environmental Division Sydney : Charlie Pierce : 277-289 Woodpark Road Smithfield NSW Australia 2164	Australia 2164
E-mail Telephone Facsimile	thomas_onus@urscorp.com +61 89255500 +61 02 89255555	E	E-mail Telephone Facsimile	: charlie.pierce@alsenviro.com : +61-2-8784 8555 : +61-2-8784 8500	
Project	: 43177139		QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement	53 requirement
Order number C-O-C number Sampler Site	 ORICA BIO TRIALS TO		Date Samples Received Issue Date	: 03-NOV-2008 : 11-NOV-2008	
Quote number	EN/001/08 V2		No. of samples received No. of samples analysed	ი ი	
This report supersedes release. This Certificate of Analysis General Comment Analytical Results Surrogate Control	 This report supersedes any previous report(s) with thi release. This Certificate of Analysis contains the following information: General Comments Analytical Results Surrogate Control Limits 	any previous report(s) with this reference. Results apply to the contains the following information:	sample(s) as submitted.	All pages of this report have been checked and	recked and approved for
VATA	NATA Accredited Laboratory 825 This document is issued in accordance with NATA	Signatories This document has been ele carried out in compliance with pro Signatories	Signatories This document has been electronically signed by the autho carried out in compliance with procedures specified in 21 CFR Part 11. <i>Signatories</i>	rized signatories indicated below. Accreditation Cat	Electronic signing has been
WORLD RECOGNISED	accreditation requirements. Accredited for compliance with ISO/IEC 17025.	Hoa Nguyen Pabi Subba	Inorganic Chemist Senior Organic Chemist (Semi-Volatile)	Inorganics Inorganics t (Semi-Volatile) Organics	

: 3 of 5	; ES0816123	: URS AUSTRALIA (NSW) PTY LTD	: 43177139	
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

- Key : CAS Number = Chemistry Abstract Services number
 LOR = Limit of reporting
 A = This result is computed from individual analyte detections at or above the level of reporting
- Poor duplicate precision for Zn due to sample heterogeneity.

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Anticational function of the parameter (with the parameter (wit	Sub Motrice SOIL		Clik	Client sample ID	SD01 31/10/08	CD03 34/40/08	CD03 34/40/08		
	OUD-IVIALITY. OUL		5		3F01_31/10/00	3L02_31/10/00	2L03_31/10/00		
Model $Cold$		Cli	ent sampli	ing date / time	31-OCT-2008 12:00	31-OCT-2008 12:00	31-OCT-2008 12:00	!	I
Stational Content I i	Compound	CAS Number	LOR	Unit	ES0816123-001	ES0816123-002	ES0816123-003	1	ł
Image: Control (related) (10 ° %) % 7.8 6.4 9.4 9.4 9.4 CST: Total (related) (10-KLS) 10 % 10 1 10 1 10 <th>EA055: Moisture Content</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	EA055: Moisture Content								
C1:1-1-100000000000000000000000000000000	^ Moisture Content (dried @ 103°C)	-	1.0	%	7.8	6.4	9.4	I	I
(ii) 740-361 5 mpga 7 -5 -5 mpga 7 -5	EG005T: Total Metals by ICP-AES								
um 740-35 1 mpga $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < 1$ $< < < 1$ $< < < < < < < < < < < > < < < < < < < $	Arsenic	7440-38-2	£	mg/kg	7	<5	<5	1	
mm 12404/3 2 mp/9 30 43 36 43 36 44 44 eff 12406/26 5 mp/9 13 14 1 14	Cadmium	7440-43-9	-	mg/kg	4	2	2		
at T40-50 5 mplo 35 45 35 45 35 45 <t< th=""><th>Chromium</th><th>7440-47-3</th><th>7</th><th>mg/kg</th><th>10</th><th>ø</th><th>16</th><th>-</th><th>I</th></t<>	Chromium	7440-47-3	7	mg/kg	10	ø	16	-	I
If the stand of the s	Copper	7440-50-8	£	mg/kg	35	45	35		
	Lead	7439-92-1	£	mg/kg	18	17	16	-	I
Title for the formation of the fo	Nickel	7440-02-0	2	mg/kg	11	7	6	•	
concretable MACCULY JY LINS Concretable MACCULY JY LINS Valuation to the problem match of the problem match o	Zinc	7440-66-6	5	mg/kg	41	38	38	-	I
Table for the form the f	EG035T: Total Recoverable Mercury by H	FIMS							
Muclear Admantic Hydrocarbons Constrained Constrained 91-20-3 0.5 mg/kg <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	ł	ł
(1,2,0,3) $(0,5)$ $(0,6)$ $(0,5)$	EP075(SIM)B: Polynuclear Aromatic Hydi	Irocarbons							
206966 0.5 $m/q0$ < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 < 0.6 <th< th=""><th>Naphthalene</th><th>91-20-3</th><th>0.5</th><th>mg/kg</th><th><0.5</th><th><0.5</th><th><0.5</th><th>1</th><th>1</th></th<>	Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	1	1
	Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5		
8-73.7 0.5 $m/6$ -0.5	Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	1	1
	Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	1	
120-12.7 0.5 mg/kg < 0.5 mg/kg < 0.5 < 0.6 < 0.5 < 0.6 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0	Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5		
	Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5		
129-000 0.5 mg/kg < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 $< $	Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5		
6.65.3 0.5 mg/g < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 <th< th=""><th>Pyrene</th><th>129-00-0</th><th>0.5</th><th>mg/kg</th><th><0.5</th><th><0.5</th><th><0.5</th><th></th><th></th></th<>	Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5		
(10, 10, 10, 10, 10) $(10, 10, 10)$ <	Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	1	1
ne $205-39.2$ 0.5 mg/kg < 0.5 < 0.5 mg/kg < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	1	-
ne $207.08.9$ 0.5 mgkg < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0	Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5		
(50.32.6) (0.5) (0.6) (0.5) </th <th>Benzo(k)fluoranthene</th> <th>207-08-9</th> <th>0.5</th> <th>mg/kg</th> <th><0.5</th> <th><0.5</th> <th><0.5</th> <th></th> <th></th>	Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5		
ene $133-36.5$ 0.5 mg/kg < 0.5 0.5 mg/kg < 0.5 0.5 mg/kg < 0.5 <t< th=""><th>Benzo(a)pyrene</th><th>50-32-8</th><th>0.5</th><th>mg/kg</th><th><0.5</th><th><0.5</th><th><0.5</th><th></th><th></th></t<>	Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5		
ene $53.70.3$ 0.5 mg/kg < 0.5 < 0.5 < 0.5 mg/kg < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5		
e 191-24-2 0.5 mg/kg <0.5	Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5		
anolic Compound Surrogates 13127-88-3 0.1 % 87.4 82.0 81.8 13127-88-3 0.1 % 90.4 79.8 81.4 13127-88-3 0.1 % 90.4 79.8 81.4 13127-87-6 0.1 % 94.7 67.0 66.7 Intercent 118-79-6 0.1 % 94.7 67.0 66.7 Intercent 321-60-8 0.1 % 94.7 67.0 96.3 Intercent 321-60-8 0.1 % 94.7 100 99.3 Intercent 321-60-8 0.1 % 100 99.3 Intercent 96.3 96.3 96.3 96.1	Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	1	1
13127-88-3 0.1 % 87.4 82.0 81.8 01 112.7-86-3 0.1 % 90.4 79.8 81.4 03951-73-6 0.1 % 90.4 79.8 81.4 01 118-79-6 0.1 % 94.7 67.0 66.7 H Surrogates 321-60-8 0.1 % 94.7 67.0 66.7 1719-06-8 0.1 % 100 99.3 1718-51-0 0.1 % 105 96.9 96.1 <th>EP075(SIM)S: Phenolic Compound Surro</th> <th>pgates</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	EP075(SIM)S: Phenolic Compound Surro	pgates							
93951-73-6 0.1 % 90.4 73.8 81.4	Phenol-d6	13127-88-3	0.1	%	87.4	82.0	81.8		
118-79-6 0.1 % 94.7 67.0 66.7 Surrogates 321-60-8 0.1 % 101 100 99.3 1719-06-8 0.1 % 105 96.9 96.1 1718-51-0 0.1 % 102 98.3 100	2-Chlorophenol-D4	93951-73-6	0.1	%	90.4	79.8	81.4		
AH Surrogates 321-60-8 0.1 % 101 100 99.3 1719-06-8 0.1 % 105 96.9 96.1 1718-51-0 0.1 % 102 98.3 100	2.4.6-Tribromophenol	118-79-6	0.1	%	94.7	67.0	66.7	1	I
321-60-8 0.1 % 101 100 99.3 1719-06-8 0.1 % 105 96.9 96.1 1718-51-0 0.1 % 102 98.3 100	EP075(SIM)T: PAH Surrogates								
1719-06-8 0.1 % 105 96.9 96.1 1718-51-0 0.1 % 102 98.3 100	2-Fluorobiphenyl	321-60-8	0.1	%	101	100	99.3	ł	1
1718-51-0 0.1 % 102 98.3 100	Anthracene-d10	1719-06-8	0.1	%	105	96.9	96.1	1	1
	4-Terphenyl-d14	1718-51-0	0.1	%	102	98.3	100	-	1

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Page	Work Order	Client	Project



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	.imits (%)
Compound	CAS Number	том	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

					15
		QUALITY	ITY CONTROL REPORT		
Work Order	: ES0816123		Page	: 1 of 6	
Client Contact	: URS AUSTRALIA (NSW) PTY LTD : MR TOM ONUS) דדע בדם	Laboratory Contact	: Environmental Division Sydney : Charlie Pierce	on Sydney
Address	LEVEL 3, 116 MILLER STREET	TREET	Address	: 277-289 Woodpark R	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail Telephone	thomas_onus@urscorp.com +61 89255500		E-mail Telephone	: charlie.pierce@alsenviro.com : +61-2-8784 8555	viro.com
Facsimile	: +61 02 89255555		Facsimile	: +61-2-8784 8500	
Project	: 43177139		QC Level	: NEPM 1999 Schedu	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site					
C-O-C number	: ORICA BIO TRIALS		Date Samples Received	: 03-NOV-2008	
Sampler Order number	0		Issue Date	: 11-NOV-2008	
			No. of samples received	ი 	
				2	
 Inis report supersedes release. This Quality Control Repor Laboratory Duplicat Method Blank (MB) Matrix Spike (MS) R 	 Inis report supersedes any previous report(s) with this reference. This Quality Control Report contains the following information: Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery Matrix Spike (MS) Report; Recovery and Acceptance Limits 	port supersedes any previous report(s) with this reference. Results apply to ality Control Report contains the following information: Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits Matrix Spike (MS) Report; Recovery and Acceptance Limits	to the sample(s) as submitted. imits imits	All pages of this rep	this report have been checked and approved
VATA	NATA Accredited Laboratory 825 This document is issued in accordance with NATA	Signatories This document has been e carried out in compliance with pr Stanatories	been electronically signed by the autho e with procedures specified in 21 CFR Part 11. Position	rized signatories	indicated below. Electronic signing has been Accreditation Category
	accreditation requirements. Accredited for compliance with ISO/IEC 17025.	Hoa Nguyen Pabi Subba Victor Kedicioalu	Inorganic Chemist Senior Organic Chemist (Semi-Volatile) Business Manager - NSW	st (Semi-Volatile) SW	Inorganics Inorganics Organics Inorganics

: 2 of 6	: ES0816123	: URS AUSTRALIA (NSW) PTY LTD	: 43177139
Page	Work Order	Client	Project



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot CAS Number = Chemistry Abstract Services number Key :

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Page	: 3 of 6
Work Order	: ES0816123
Client	URS AUSTRALIA (NS

- (NSW) PTY LTD
- 43177139

Project



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:-No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

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Laboratory sample ID EA055: Moisture Co	Client sample ID					- dioin ionna	unday (in a) annual a diam inana		
Laboratory sample ID EA055: Moisture Co	Client sample ID								
EA055: Moisture Co		Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
	EA055: Moisture Content (QC Lot: 803051)								
ES0816111-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	1	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
ES0816111-010	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	1	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES	s by ICP-AES (QC Lot: 803274)	13274)							
ES0816107-001		EG005T: Cadmium	7440-43-9	-	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0816128-002	Anonymous	EG005T: Cadmium	7440-43-9	-	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	7	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Reco	EG035T: Total Recoverable Mercury by FIMS	(QC Lot: 803276)							
ES0816107-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0816128-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polyn	EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 802987)	bons (QC Lot: 802987)							
ES0816095-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

ALS		
	oort	
	Laboratory Duplicate (DUP) Report	
	Laboratory D	

Original Result Duplicate Result RPD (%) Recovery Limits (%)

Anonymous

Anonymous Anonymous

Anonymous

mg/kg

0.5

191-24-2

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 802987) - continued ES0816095-001 Anonymous EP075(SIM): Benzo(g.h.i)perylene

Unit

LOR

CAS Number

		ΡΤΥ LTD			Method: Compound
: 4 of 6	: ES0816123	: URS AUSTRALIA (NSW) PTY LTD	: 43177139		Client sample ID
Page	Work Order	Client	Project	Sub-Matrix: SOIL	Laboratory sample ID Client sample ID

: 5 of 6	; ES0816123	: URS AUSTRALIA (NSW) PTY LTD	: 43177139	Wethod Blank (MB) and Laboratory Contro
Page	Work Order	Client	Project	Method Blan



The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS. l

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Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LCS) Report	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery Limits (%)	imits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	TCS	Том	High
EG005T: Total Metals by ICP-AES (QCLot: 803274)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.1 mg/kg	107	90.1	124
EG005T: Cadmium	7440-43-9	-	mg/kg	⊽	2.76 mg/kg	102	83.3	111
EG005T: Chromium	7440-47-3	2	mg/kg	42	60.9 mg/kg	101	89.2	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	105	90.1	114
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.2 mg/kg	109	85.2	111
EG005T: Nickel	7440-02-0	2	mg/kg	42	54.8 mg/kg	104	88.3	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	104 mg/kg	103	81.9	112
EG035T: Total Recoverable Mercury by FIMS (QCLot: 803276)	276)							
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	95.2	67	118
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 802987)	t: 802987)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	104	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	106	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	103	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	101	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	109	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	106	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	101	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	104	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	106	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	104	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	98.9	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	103	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	96.8	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	102	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	106	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	106	72.4	114





Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Matrix Spike (MS) Report

Sub-Matrix: SOIL

				Spike	Spike Recovery (%)	Recovery Limits (%)	Limits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	SW	Том	High
EG005T: Total Meta	EG005T: Total Metals by ICP-AES(QCLot: 803274)						
ES0816107-001	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Rec	EG035T: Total Recoverable Mercury by FIMS (QCLot: 803276)						
ES0816107-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polyr	EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 802987)	(387)					
ES0816095-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous

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Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

: 1 of 5	: Environmental Division Sydney : Charlie Pierce : 277-289 Woodpark Road Smithfield NSW Australia 2164	: charlie.pierce@alsenviro.com : +61-2-8784 8555 : +61-2-8784 8500	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement	: 03-NOV-2008 : 11-NOV-2008	<u>۳</u>
Page	Laboratory Contact Address	E-mail Telephone Facsimile	QC Level	Date Samples Received Issue Date	No. of samples received No. of samples analysed
: ES0816123	: URS AUSTRALIA (NSW) PTY LTD : MR TOM ONUS : LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW, AUSTRALIA 2060	: thomas_onus@urscorp.com : +61 89255500 : +61 02 89255555	: 43177139 :	: ORICA BIO TRIALS : TO 	: EN/001/08 V2
Work Order	Client Contact Address	E-mail Telephone Facsimile	Project Site	C-O-C number Sampler Order number	Quote number

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
 - Brief Method Summaries
 - Summary of Outliers

Part of the ALS Laboratory Group 277-289 Woodpark Road Smithfield NSW Australia 2164 Tel. +61-2-8784 8555 Fax. +61-2-8784 8500 www.alsglobal.com A Campbell Brothers Limited Company

Environmental Division Sydney

extraction / digestion is involved or period from extraction / digestion where this is present. For composite sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date
for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in
the Summary of Outliers.
Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the
leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days): & other metals (180 days). A recorded heach therefore does not

analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not . tor the leach date with the shortest analyte holding time guarantee a breach for all non-volatile parameters. Holding times for leachate m

dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent

					-	-		-
Matrix: SOIL	. 6.				Evaluation:	<pre>x = Holding time</pre>	Evaluation: $x =$ Holding time breach; $\checkmark =$ Within holding time.	holding time.
Method		Sample Date	Ext	Extraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
SP01_31/10/08,	SP02_31/10/08,	31-OCT-2008	1	1	-	04-NOV-2008	07-NOV-2008	>
SP03_31/10/08								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
SP01_31/10/08,	SP02_31/10/08,	31-OCT-2008	04-NOV-2008	29-APR-2009	>	05-NOV-2008	29-APR-2009	>
SP03_31/10/08								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
SP01_31/10/08,	SP02_31/10/08,	31-OCT-2008	04-NOV-2008	29-APR-2009	>	05-NOV-2008	28-NOV-2008	>
SP03_31/10/08								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved								
SP01_31/10/08,	SP02_31/10/08,	31-OCT-2008	04-NOV-2008	14-NOV-2008	>	05-NOV-2008	14-DEC-2008	>

SP01_31/10/08, SP03 31/10/08







The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to

Evaluation: **x** = Ouality Control the expected rate. A listing of breaches is provided in the Summary of Outliers. Matrix: SOI

Matrix: SOIL				Evaluation	: × = Quality Cor	ntrol frequency no	Evaluation: x = Quality Control frequency not within specification; < = Quality Control frequency within specification.
Quality Control Sample Type		Count	unt		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	-	5	20.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	-	5	20.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	-	5	20.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	-	20	5.0	5.0	>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	-	5	20.0	5.0	>	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	-	20	5.0	5.0	>	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	-	20	5.0	5.0	>	ALS QCS3 requirement







Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analvsis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.	ds have been developed a	ire provided withii	the Method Descriptions.
Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
PAH/Phenois (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

: 5 of 5	: ES0816123	: URS AUSTRALIA (NSW) PTY LTD	: 43177139
Page	Work Order	Client	Project



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QW/IEN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

No Quality Control Sample Frequency Outliers exist.

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division



SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES0816123		
Client Contact Address	: URS AUSTRALIA (NSW) PTY LTD : MR TOM ONUS : LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Laboratory Contact Address	 Environmental Division Sydney Charlie Pierce 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail Telephone Facsimile	: thomas_onus@urscorp.com : +61 89255500 : +61 02 89255555	E-mail Telephone Facsimile	: charlie.pierce@alsenviro.com : +61-2-8784 8555 : +61-2-8784 8500
Project Order number	: 43177139 :	Page	: 1 of 2
C-O-C number Site	: ORICA BIO TRIALS	Quote number	: ES2008URSNSW0039 (EN/001/08)
Sampler	: TO	QC Level	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dates			
Date Samples Reco	eived : 03-NOV-2008	Issue Date	: 04-NOV-2008 08:50
Client Requested D	ue Date : 11-NOV-2008	Scheduled Reporting	ng Date : 11-NOV-2008
Delivery Deta	ails		
Made of Delivery		T	0.410

Mode of Delivery	: Carrier	Temperature	: 6.4'C - Ice present
No. of coolers/boxes	: 1 HARD ESKY	No. of samples received	: 3
Sercurity Seal	: Not intact.	No. of samples analysed	: 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Sample(s) have been received within recommended holding times.
- Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
- Sample temperature breach to 6.4' C.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (14 days), Solid (90 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

• No sample container / preservation non-compliance exist.

Summary of Sample(s) and Requested Analysis

process neccessar tasks. Packages r the determination tasks, that are includ When date(s) and	y for the execution nay contain addition of moisture cont	al analyses, such as ent and preparation own bracketed, these	- EP075 SIM PAH only PAH only	S-02 Is (incl. Digestion)
Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E SIM - P/	SOIL - S-02 8 Metals (incl.
ES0816123-001	31-OCT-2008 12:00	SP01_31/10/08	✓	1
ES0816123-002	31-OCT-2008 12:00	SP02_31/10/08	1	1
ES0816123-003	31-OCT-2008 12:00	SP03_31/10/08	1	✓

Requested Deliverables

EQUIS URS EDMS

EQUIS URS_EDMIS		
- EDI Format - EQUIS V5	Email	urs_edms@urscorp.com
MR TOM ONUS		
 *AU Certificate of Analysis - NATA 	Email	thomas_onus@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	thomas_onus@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	thomas_onus@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	thomas_onus@urscorp.com
- Default - Chain of Custody	Email	thomas_onus@urscorp.com
- EDI Format - ENMRG	Email	thomas_onus@urscorp.com
- EDI Format - MRED	Email	thomas_onus@urscorp.com
PENNY BAKER		
 *AU Certificate of Analysis - NATA (COA) 	Email	penny_baker@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	penny_baker@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep) (QCI_NoAnon	Email	penny_baker@urscorp.com
)		
 AU QC Report (Anon QC Not Rep) - NATA (QC_NoAnon) 	Email	penny_baker@urscorp.com
 Default - Chain of Custody (COC) 	Email	penny_baker@urscorp.com
- EDI Format - ENMRG (ENMRG)	Email	penny_baker@urscorp.com
- EDI Format - MRED (MRED)	Email	penny_baker@urscorp.com
THE ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice	Email	sydney_accounts@urscorp.com

BARRY F COSIER SOLICITORS

PROPOSED RESIDENTIAL SUBDIVISION, WILLAWA STREET, PORTLAND

ENVIRONMENTAL SITE ASSESSMENT

E12591/1-AE 4 February, 2002

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Geotechnical & Resources (Environmental | Technical (Project Management

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- D Laboratory Analytical Reports and Chain of Custody Forms
- E QA/QC Data Validation Report

Coffey ###

E12591/1-AE JML 4 February, 2002

Barry F Cosler Solicitors 50 Main Street UTHGOW NSW 2790

Attention: Mr Lloyd Monck

Dear Sir,

RE: PROPOSED RESIDENTIAL SUBDIVISION, WILLAWA STREET, PORTLAND ENVIRONMENTAL SITE ASSESSMENT

Coffey Geosciences Pty Ltd (Coffey) is pleased to provide our Environmental Site Assessment (ESA) report for the above site.

We draw your attention to the enclosed sheet entitled "Important Information About Your Coffey Environmental Site Assessment" which should be read in conjunction with the report.

We trust that our report meets with your requirements. If you require any further information regarding our report, please do not hesitate to contact either of the undersigned.

For and on behalf of COFFEY GEOSCIENCES PTY LTD

ROSS BEST Senior Principal

JOSHUA

Project Manager

Distribution:

Original Coffey Geosciences Pty Ltd File E12591/1 1 copy Coffey Geosciences Pty Ltd Library 4 copies Barry F Cosier Solicitors (3 bound, 1 unbound)

> 142 Wicks Road North Ryde NSW 2113 Australia PO Box 126 North Ryde NSW 1670 Australia Telephone +61 2 9866 7444 Facsimike +61 2 9868 9977 Email sydney@coffey.com.au

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Coffey Geosciences Pty Ltd. ACN 055 335 516

EXECUTIVE SUMMARY

This report presents the results of an Environmental Site Assessment (ESA) undertaken by Coffey Geosciences Pty Ltd (Coffey) for a proposed residential subdivision located at Willawa Street, Portland. It is understood that the ESA is required to support the development application for the proposed residential subdivision on the site.

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The ESA revealed that the site is likely to be suitable for the proposed residential use with gardens and accessible soil (home grown produce contributing less than 10% fruit and vegetable intake, no poultry) subject to:

- Further delineation then remediation and/or management of heavy metal contamination in near surface soil across the site;
- Undertaking a hazardous materials assessment of remaining buildings on the site and managing any hazardous materials identified appropriately to prevent recontamination of near surface soils.

It is recommended that additional sampling and analysis be undertaken by Coffey or another suitably qualified environmental consultant to further assess the extent of heavy metal in near surface soil. Following the additional sampling and analysis, it is recommended that a remediation action plan (RAP) be prepared outlining remediation and validation procedures for the heavy metal contaminated near surface soil.

It is considered that the most feasible remediation option for the heavy motal contaminated soil is likely to be excavation of the contaminated material and then either offsite disposable of the material to a suitably licensed landfill or reuse of the material on a part of the cement works which will be used for less sensitive use such as commercial/industrial.

Prior to removal of the soil from the site it would need to be classified in accordance with the NSW EPA (1999) Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes.

1. INTRODUCTION

1.1 General

This report presents the results of an Environmental Site Assessment (ESA) undertaken by Cofley Geosciences Pty Ltd (Cofley) for a proposed residential subdivision located at Willawa Street, Portland (see Figure 1).

The work was commissioned by Mr Lloyd Monck in a facsimile dated 23 January, 2002. The commission was in response to a Coffey proposal dated 23 January, 2002 (Ref: E12591/1-AB).

It is understood that the ESA is required to support the development application for a proposed residential subdivision on the site.

1.2 Proposed Development

The proposed subdivision layout is shown on Figure 1. According to the proposed subdivision layout, a residential subdivision of approximately 1.3Ha comprising 23 altotments is proposed for the site.

It is understood that four of the existing residential cottages on the site will be retained and refurbished while four existing cottages will be demotished. A number of new residential dwellings will be constructed across the site. A road will be constructed along the northern boundary of the site while a second road will be constructed between proposed lots 14 and 15 to Willawa Street.

1.3 Objectives and Scope of Work

The objectives of the Environmental Site Assessment were to:

- identify potentially contaminating activities that are currently being performed on the site and that may have been performed on the site in the past;
- make an assessment of potential contamination issues by undertaking soil sampling and testing; and
- advise on additional investigations and/or remediation work that may need to be undertaken before the site can be considered suitable for the proposed residential use.

The scope of work included:

- a site history review and site visit to identify potential Areas of Environmental Concern (AECs) and chemicals of concern (COCs);
- field investigations;
- laboratory analysis;
- data assessment; and
- reporting,

Assessing the buildings on the site for the presence of hazardous materials such as asbestos, lead paint and PCB containing light fittings was not included in the study.

2. SITE DESCRIPTION

2.1 Location and Site Features

The site is located on Willawa Street, Portland and is known as Lot 1 DP 109592 and Part Portion 52 within the Lithgow Shire Council municipality. The bulk of the site comprises a rectangular area which is proposed to be divided into 22 allotments with the 23rd allotment separated from the main part of the site by an existing building. The site has a total area of approximately 1.3Ha.

The main western part of the site is rectangular in shape and has an has an area of about 1.2Ha with dimensions of about 280m x 45m. This part of the site is bounded by Willawa Street to the south, church land to the west, the Portland Cement Works Quarry to the north and a block of land containing an annex building and childcare contre to the east.

The western part of the site is located on two levels separated by a steep bank which slopes down to the west. The slope is covered by several pine trees. Seven semi-detached painted brick cottages with corrugated iron rooves were located on the area to the east of the bank at the time of the site visit. The cottages fronted Willawa Street and had grass backyards. A substantial proportion of the paint on the cottages was observed to be peeling. A number of corrugated iron carports and sheds were located in the backyards. There were also a number of concrete slabs in some of the backyards which could have been associated with former sheds. Most of the cottages had fibro annexes at the rear. Some of the cottages were separated by wooden and corrugated iron fences which were in poor condition. At the time of the site visit, the area to the west of the bank was vacant and grass covered.

The smaller eastern part of the site is rectangular in shape and has an has an area of about 600m² with dimensions of 24.2m x 24.6m. This part of the site is bounded by Willawa Street to the south, a vacant block of land to the east, the block of land containing an annex building and childcare centre to the east and a workshop associated with the cement works to the north.

At the time of the site visit, a painted brick cottage with a corrugated iron roof (which was formerly known as 'the casino' was located in the eastern part of the site. The cottage was surrounded by a grass yard with a number of tress in the backyard.

No visual evidence of petroleum hydrocarbon contamination such as oil staining was observed on the site. Vegetation on the site appeared to be healthy.

A large proportion of rainwater falling on the site is likely to infiltrate into site soils while any runoff would be directed to Willawa Street.

2.2 Surrounding Landuse

The surrounding landuse is as follows:

- The former Cement Works Quarry and facilities to the north.
- Church land to the west;
- Vacant land to the immediate east and facilities associated with the Cement Works further to the east;
- Commercial properties including a service station across Willawa Road to the south of the part of the site to the east of the bank;
- Residential dwellings across Willawa Road to the south of the part of the site to the west of the bank;
- An annex building and child care centre in between the two parts of the site.

2.3 Local Geology and Hydrogeology

The Bathurst 1:250,000 Geological Sheet produced by the geological survey of NSW, suggests that the site is undertain by quartz greywacke and slate which overfies shale and limestone.

Groundwater beneath the site is expected to occur in the bedrock, however it is possible that groundwater perched on clay or bedrock may be present.

3. SITE HISTORY REVIEW

The site history study undertaken by Cofley included:

- a site visit;
- Interviews;
- a review of a horitage report on the area;
- a check of NSW EPA records for notices on the site; and
- a review of historical aerial photography for the last 50 years.

3.1 Site Visit

A Coffey Environmental Scientist visited the site on 24 January, 2002. Observations made during the site visits are summarised in Section 2.1 and Section 2.2.

3.2 Interviews

A telephone interview was carried out with Mr Mark James, who has worked on the site for a number of years and has lived in the area for around thirty years. Mr James provided the following information:

- The cottages on the site were used for housing workers of the cement works;
- As far as Mr James is aware, the area has only ever been used for residential purposes and there has never been significant chemical storage on the site;
- The annex building in between the western and eastern parts of the site formerly was used for munitions storage during world War II and was subsequently used for storage of components for the Cement Works and for use as a community hall. The smaller building on that lot was used as a day care centre;
- Four fibro cottages were demolished about three years ago on the lower part of the site. They were
 demolished by contractors licensed to remove asbestos. The asbestos was disposed of offsite.

An interview was carried out with Mr Lloyd Monck, a representative of the developers of the site. He provided the following information:

- The cottages on the site have been there for a long period of time, some as long as around 100 years;
- The collages were used for housing employees of the cement works;
- As far as Mr Monck is aware, the site has only ever been used as housing;
- The annex building in between the western and eastern parts of the site formerly was used for munitions storage;

3.3 Aerial Photograph Review

Aerial Photographs of the sile were purchased from the Aerial Photos Section of the Department of Land and Water Conservation. The results of the assessment may be summarised as follows:

- The earliest available photograph from 1954 revealed that the seven cottages which are currently located in the western part of the site to the east of the bank were already present. In addition, four cottages were located in the currently vacant area to the east of the bank. What appeared to be a dirt road was located in the area where the steep vegetated bank is now located. The cottage which is now located in the eastern part of the site was already present. The cottages were surrounded by grass covered yards. With respect to surrounding fanduse, the annex building in between the eastern and western parts of the site was already present and the church buildings to the west of the site were already present. The Cement Works Quarry was present to the north of the site and the main Cement Works facilities were located to the site had not yet been constructed. The landuse across Willawa Street to the south of the site appeared to be similar to today.
- The aerial photograph from 1964 revealed that the main features of the site and surrounding land had not changed significantly from 1954.
- The aerial photograph from 1972 revealed that the main features of the site had not changed significantly from 1964. It appears that the from workshop had been constructed to the north of the eastern part of the site;
- By 1993, the dirt road which was seen in the previous photographs was no longer present and had been
 replaced by the steeply sloping bank covered by trees. Otherwise, the main features of the site-and
 surrounding land had not changed significantly from 1972.
- The most recent aerial photograph from 1998 revealed that the main features of the site and surrounding land had not changed significantly from 1993. This suggests that that the four cottages in the western part of the site were demolished after 1998;

3.4 NSW EPA Records

A check with the NSW EPA Pollution Line on the 4th of August, 2002 revealed that a notice was issued on the Portland Cement Works under Section 35 of the Environmentally Hazardous Chemicals Act (1995). The notice was issued on the 17th of August 1995. It is unclear whether the site currently being investigated was covered by the notice.

The notice stated that the EPA had reasonable grounds to believe that soil and water on the premises was contaminated with heavy metals and PAHs as a consequence of cement manufacturing and associated operations on the premises. The EPA directed the occupier to sample and analyse waters, soil and sediment and to carry out a hydrological study over the whole premises. The EPA also directed the occupier to submit a report detailing the findings of the investigation and if necessary submitting a draft remediation plan.

On 6 August 1999, the EPA issued a second notice on the Portland Cement Works stating that the occupier had complied with all the conditions of the 1995 notice.

Copies of the notices are included in Appendix A.
3.5 Heritage Report

A brief review was undertaken of the report entitled "A Heritage Assessment of the Portland Cement Works", prepared for Blue Circle Southern Cement Limited by Peter Fenwick in September 1993.

The report covered the Cement Works including the eastern part of the site. The western part of the site was excluded from the study area. The following relevant information was obtained from the report:

- Limestone quarrying commenced in the Portland area in 1869 and cement production commenced in 1887;
- The Commonwealth Portland Coment Works operated from 1902 until 1991. In 1974 the Cement Works were purchased by Blue Circle Southern Cement Limited.
- A plan from the early 1900s shows the seven cottages to the east of the bank and the casino building were already present. The part of the site to the west of the bank was vacant. The annex building was not yet present.
- The church to the west of the site was built in the early 1900s.
- The annexe was built for munitions storage in 1943.

3.6 Summary of Site History

The information obtained from the site history review and site walkover revealed that the site contained residential coftages for workers of the Commonwealth Portland Cement Works since the early 1900s. A total of twelve cottages were originally on the site of which four have recently been demolished.

No evidence of the presence of underground storage tanks (USTs) or above ground storage tanks (ASTs) nor of the storage of hazardous chemicals was identified during the site history review.

Potential offsite sources of contamination include a service station located across Williawa Street to the south of the site, the Cement Works facilities located to the east of the site including a workshop to the north of the eastern part of the site and the annex building located between the western and eastern parts of the site which was formerly used as a munitions store.

In 1995, the EPA issued a notice on the Porliand Cement Works under Environmentally Hazardous Chemicals Act (1995) instructing the occupier to undertaken an assessment of contamination on the Porliand Cement Works. It is unclear whether or not the site currently being investigated was covered by the order. The EPA issued a second notice in 1999 stating that the occupier had complied with the conditions of the 1995 notice.

4. POTENTIAL AREAS OF ENVIRONMENTAL CONCERN (AEC)

Based on the site history potential areas of environmental concern (AECs) and associated chemicals of concern were identified. These are summarised in Table 1.

Potential	Description of potentially	CoCs*	Likelihood of	··· Remarks
AECs	contaminating activity		Contamination	
·		1	(Based on Site	
			History Study	
			Only)**	
 Sheds and 	Leaching or weathering of	Metals	Metals - High	Likely to be present as a large number of
Buildings	contaminants potentially	Asbestos	Asbestos -	localised hotspots around existing
	contained in building		Medium	sheds/buildings and areas which formerly
	materials (i.e. lead from			contained sheds/buildings. If present, likely
	lead based paint, zinc	}		to be limited to near surface soil.
	from galvanised			
	comugated iron and			
	asbestos from fibro)			
2. Remainder	Potential burial of fill	Metals	Low to Medium	No evidence of significant filling of the site
of Site	material	TPH		was encountered during the site history
		PAH		review. However, it is possible that buried
		OCP		fill areas not identified in the site history
		Asbestos		review may be present.
3. On Site	Potential migration of	TPH	Low	Potential sources of onsite migration
Migration	contaminants from	BTEX		include the Cement Works facilities to the
	adjacent sites	Metals		east of the site and the service station
	-	PAH		across Willawa Street to the south of the
				site. Taking into account the topography of
				the site and surrounding land and the
				distance of potential contamination sources
				to the site, the likelihood of onsite
				contaminant migration is considered to be
				loy.

TABLE 1: SUMMARY OF POTENTIAL AREAS AND CHEMICALS OF CONCERN

CoC - Chemicals of Concern

** It is important to note that this is not an assessment of the financial disk associated with the AEC in the event contamination is detected, but a qualitative assessment of the probability of contamination being detected at the potential AEC based on the site history study.

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Metals Include Arsenic, Cadmium, Chromium, Copper, Load, Mercury, Zinc and Nickel

BTEX - Benzene, Tolucno, Ethylbenzene and Xylene

TPH - Total Potroleum Hydrocarbon

PAH - Polynuclear Aromatic Hydrocarbon

OCP- Organochlorine Posticides

5. REGULATORY BACKGROUND AND APPLICABLE GUIDELINES

For assessing contamination levels in soil in urban settings, the NSW EPA, (1998) Guidelines for the NSW Site Auditor Scheme present health based investigation levels for different landuses (e.g. Industrial/commercial, residential, recreational etc.) as well as provisional phytotoxicity based threshold concentrations.

As the site is to be redeveloped as a residential subdivision, the guidelines for residential sites with gardens and accessible soil (home-grown produce contributing less than 10% fruit and vegetable intake, no poultry) are considered the most applicable to this site.

For residential sites with gardens and accessible soil (home-grown produce contributing less than 10% fruit and vegetable intake, no pouliry), the lower of the human health based threshold levels listed in Column 1 and the provisional phytotoxicity based guidelines listed in Column 5 of the table in the NSW EPA (1998) guidelines may be adopted as investigation or acceptance criteria for the respective contaminants of concern.

NSW EPA (1998) do not provide threshold levels for TPH. NSW EPA (1994) Guidelines for Assessing Service Station Sites, provide an indication of acceptable cleanup levels for petroleum hydrocarbons compounds at service station sites to be reused for sensitive landuses such as residential.

The relevant NSW EPA (1998) and NSW EPA (1994) threshold concentrations are summarised in Table 4 of Section 7.

6. FIELD INVESTIGATIONS

6.1 Soil Sampling

Fieldwork was carried out by a Coffey Environmental Engineer and a Coffey Environmental Scientist on 24 January, 2002,

The fieldwork comprised:

- Excavation of fifteen test pits (identified as TP1 to TP15) across the site using a backhoe. The test pits
 were spread across the site to provide a reasonable site coverage for the ESA. Due to access restraints
 the test pits located to the east of the bank were all located in the backyards of the existing cottages. The
 test pits were excavated to depths ranging between 1.1m and 2.0m. Environmental soil samples were
 generally collected at two depths from each test pit. Samples were collected from the wall of the test pits
 using a decontaminated stainless steel trowel;
- Drilling of thirteen hand auger holes (identified as BH1 to BH11). The hand auger holes were mostly located within 1m of cottages/buildings to assess potential leaching or weathering of contaminants contained in building materials. The hand auger holes were drilled to depths ranging between 0.3m and 0.8m. Soil samples were collected directly from the hand auger.

The sampling locations are shown on Figure 1. Hand auger boreholes and test pit logs are included in Appendix B.

Soil samples were divided into two sub-samples, one of which was placed into a laboratory-supplied, acidrinsed 250mL glass jar, the other of which was bagged for field headspace screening. The samples were placed in a cooler box chilled with Ice. A photoionisation detector (PID) was used to screen the headspace gases of the bagged soil samples. The PID provides a semi-quantitative indication of the presence of volatile organic compounds in the soil. The PID used was a Minirae calibrated with isobutylene gas at 104ppm prior to use.

6.2 Field Quality Assurance/Quality Control

Sampling activities, were based on procedures and protocols outlined in Colley's Environmental Field Manual (QP15/5-E, June 1995, revised September 1997) which is based on industry accepted standard practice.

Sampling equipment that came directly in contact with the soil (e.g. hand auger, trowel) was decontaminated between samples by scrubbing with a solution of Decon-90, a phosphate-free detergent followed by rinsing with potable water. A clean pair of disposable gloves was used when handling each sample.

A wash blank (identified as WB-25-1-02) was collected by running laboratory supplied deionised water over the hand auger and into sample bottles. The wash blank was used to check the efficacy of field decontamination procedures.

Three duplicate soil samples identified as TP4A 0.1-0.3 (dup of TP4 0.1-0.3), TP8A 0.1-0.3 (dup of TP8 0.1-0.3) and TP10A (dup of TP10 0.1-0.3) were submitted for laboratory analysis. The duplicate samples were used to check whether the field sampling and laboratory procedures adequately reproduced results

6.3 Laboratory Analysis

The soil samples were dispatched to the Australian Laboratory Services (ALS) Environmental, a NATA registered laboratory, in one batch under chain of custody conditions on 25 January 2002.

A fotal of twenty-nine soil samples (plus three duplicate samples and one wash blank) were selected for laboratory analysis. The other samples were held in the laboratory for future analysis if required.

The laboratory analysis schedule is summarised in Table 2,

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Area	Sampling	Sample I.O	Material	Laboratory Analysis
	Locations	· · · · ·	Doscription	
Western Part of Sile to the East of the	TP2	1P2/0.1-0.35	Fill	Heavy Metals, TPH, BTEX, PAH
Bask	TP2	TP2/0.4-0.65	FNI	Hoavy Metals
(Proposed Lots 1 to	TP3	TP3/0.25-0.45	Fill	Heavy Metals, PAH
14)	TP4	TP4/0.1-0.3	Fill	Reavy Motals, TPH, 8YEX, PAH
-	1°P5	TP5/0.25-0.55	Fill	Hoavy Motals, PAH
	TP6	TP6/0.25-0.45	FAI	Heavy Metals, TPH, BTEX, PAH, Asbestos
	TP7	TP7/0.0-0.21	Fill	Heavy Metals, PAH
	TP7	TP7/0.35-0.55	Fill	Heavy Metals
	BH1	8H1/0.0-0.3	Fill	Heavy Melais
	8812	6112/0.0-0.3	Fai	Heavy Metals
	9H5	BH5/0.0-0.3	Fill	Heavy Metals
	8116	BH6/0.0-0.3	书紙	Heavy Metals, Asbestos
	BH7	BH7/0.0-0.3	詞	Heavy Motels, Asbostos
	BI -1 6	8H8/0.0-0.3	Filt	Heavy Metals, Asbestos
	8H9	8H9 / 0.0-0.3	Fill	Heavy Metals, Asbestos
	8H10	01110/0.0-0.3	Fill .	Heavy Metals, Asbestos
	0H11	BH11/0.0-0.3	Fill	Heavy Metals, Asbestos
Western Part of the	TP8	TP8/0.1-0.3	Fill	Hoavy Motals, Asbestos
Site to the West of the Bank	TP9 ,	TP9/0.2-0.4	Fil	Heavy Metals
	TP9	TP9/1.0-1.2	Residual	Heavy Metals
(Proposed Lots 15 to 22)	TP10	TP10/0.1-0.3	Residual	Heavy Metals, TPH, BTEX, PAH, Asbostos
,	TP11	TP11/0.1-0.3	Fill	Heavy Metals, PAH, Asbestos
	TP12	T12/0.0-0.15	Fill	Heavy Metals, Asbestos
	TP13	TP13/0.1-0.3	ក៖	Hoavy Motals, TPH, BTEX, PAH
	TP14	TP14/0.0-0.2	FBI	Heavy Melais, Asbestos
	TP14	TP14/0.8-1.0	Residuai	Heavy Metals
Eastern	TP15	TP15/0.1-0.3	Fill	Heavy Metals, PAH, Asbestos
Part of Site	BH3	8H3/0.0-0.3	Fill	Heavy Metals, Asbestos
(Proposed Lot 23)	BH4	BH4 / 0.0-0.3	Fill	Heavy Metals
QAVQC	TP4	TP4A/0.1-0.3	Dup of TP4 / 0.1-0.3	Heavy Metals, TPH, BTEX, PAH
	TP8	TP8A/0.1-0.3	Dup of TP8 / 0.1-0.3	Heavy Metals, Asbestos
	TP10	TP10A/0.1-0.3	Dup of TP10 / 0.5-0.6	Hoavy Metals, TPH, BTEX, PAH, Asbestos
	Wash Blank	WB25-1-02	Wator	Heavy Metals

TABLE 2: SOIL SAMPLING AND ANALYSIS SCHEDULE

Heavy metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Zinc and Nickel OPP - Organophosphorus Pesticides TPH - Total Petroleum Hydrocarixon

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7. RESULTS & SITE CHARACTERISATION

7.1 Subsurface Conditions

From test pit and hand-auger hole observations, the site is undertain by a fill material ranging in thickness from 0.1m to 0.75m in the western part of the site and 1.25m in the eastern part of the site. The fill material typically comprised sandy sill with some gravel charcoal and a trace of plastic, glass, bricks and/or coal observed at some locations. The fill material was observed to be undertain by residual soils including silt and clay.

Groundwater was not observed in any of the test pits.

7.2 PID Results

PID headspace results ranged up to 49.2ppm. The PID response was slow suggesting that it may have been responding to moisture in the samples rather than volatile ionisable contaminants.

The PID results are presented in Appendix C.

7.3 Laboratory Results

The laboratory analytical report is presented in Appendix D. The soil sample analytical results are summarised in Table 4.

7.3.1 Quality Assurance / Quality Control (QA/QC) Results And Data Usability

Samples were received by Amdel within the recommended holding times and they were chilled at 4°C when received. Copies of the Chain of Custody documentation are included in Appendix D.

A data validation report has been prepared for QA/QC purposes and is presented in Appendix E. The conclusions of the data usability assessment, are presented in Table 3. The data useability assessment revealed that the data is directly useable and reasonably represents conditions at the sampling locations at the time of sampling.

		· OOHARANT V	OI DAIA UJAU	ALLI AGOLO	SMERT	
Batch No.	Sampling Date	Sample Handling	Precision & Accuracy	Field	Lab QA/QC	Data Usability
ALS Batch ES31740	24/1/02	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Directly Useable

TABLE 3: SUMMARY OF DATA USABILITY ASSESSMENT

.

TABLE 4 SUMMARY OF LABORATORY RESULTS (SOIL) All results in mg/kg

Sample Ю	1	165	iP2	103	1 104	TP4A	TPS	1196
Geological Origin	TARKESHOLD	- Fël	ধ্য	Fill		Dup of	Ed	1 18
Date of Sampling	CONCENTRATION	74-Jan-02	24-300-02	24-Jan-02	24-Jan 02	194	24-Jan-02	24-Jan-02
Depth (m)	·	0.1-0.35	0.44.65	0.25-0.45	0.1-0.3	0.1-0.3	0.25-0.55	0.25-0.45
HEAVY METALS		ا ت ا						
Arsenic	20 '	- <u> </u>	6	4	3	4	2	2
Cadmium	3,	्त	<1		4	4	4	
Checonium	400 ²	21	42	16	17	16		18
Copper	100 2	44	з	3	43	44	3	6
Nickel		8	1	<u> </u>	. 24	22	<1	1
lead	300 5		21	14	178	194	10	<u>.</u>
Zine	200 2		6	8	201		. 9	3
Moscusey in: Soll	1 ²	0.1	-d.1	ঝা	0.4	0.4	ঝা	<0.i
TOTAL PETROLEUM RYDROCAR	BONS						•••	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
CG - C3 Fraction	65 1	<2		·	2	2		<2
C18 - C14 Fraction				-	<50	<50		<50
C15 - C28 Fraction		<00			<100	<100		<100
C29 - C36 Fraction	· · · · · · · · · · · · · · · · · · ·	<00		•	<100	<100		<100
Total C10-C36	1000 *	ND		•	ND	NO	•	ND
BTEX				·	····			
Bonzeno	1	-49.2	-		-41.2	~0.2		⊲0.2
Totuena	130 3	<02	 -		-0.2	<0.2	·	√0.2
Ethylbenzene	50 [‡]	⊲0.2	-		۹.2	<1.2		<0.2
Xylene	25 3	<0.4		.			.	-84
POLYNUCLEAR AROMATICS	1				· ·			
Maphinatene		<0.5	•	থা.5	⊲3.5	<0.5	-\$5	<0.6
Acenaph@ylena		-05		<15	40,5	⊲0.5	-49.5	-0.6
Ассларійсто		<0.5		-0.5	⊲0,5	-0.5	40.5	<0.5
Hudread		<0.5	-	<0.5	40.5	<0.5	⊲0.5	⊲0.5
Phonasthrena		-0.5	-	<0.5	<0.5	<0.5	4.5	₫.5
Алёнаселя		43.5		⊲0.5	-0.5	⊲0.5	⊲0.5	<0.5
fluoranthene		<0.5	•	40.6	<0.5	<0.5	-@\$	-0.5
Ручеве		<15	•	⊲1.5	<0.5	⊲0.5	<0.5	<0.5
Genzlahanevacene		<05	. 1	40.5	<0.5	⊲0.6	43.6	4 .6
Quyseno		<0.5	-	⊲0.5	4.5	-0.6	43.5	<0.5
Boazó(b)ikuoranshena		≪0.6	-	<0.5	40.5		40.6	<0.5
Benzo[%]fluoranthene		41.6	-	≪0.5	<6.5	-0.5	⊲0.6	<0.5
Senzo[a]pyrene	11	4 .5		<0.5	<0.8	⊲0.5	⊲0.6	<0.5
indeno(1.2.3.od)pynene		41.5		45	-0.6	<0.5	⊲0.5	<0.5
Dibenz(a.h)enthracene		<0.5	-	<0.6	<0.5	⊲0.5	<0.5	<0.5
Beazo(g.h.d)perylene		<0.5	•	<0.5	<4.5	<0,5	<9.5	<0.5
Total PAH	20 ¹	ND	-	ND	CM	ND	ND	ND
ÓTHER					1			
vedentes		•			•		-	ND

NOTES:

ConcentreSon exceeds the respective threshold concentration Based on the Health Based Soil Investigation Lavetin Column 1 of the MSNY EPA (1998) Audion Guidelines

* Based on the Phytotoxicity Based Sozianes Egation Level in Column 5 of the HSY/EPA (1998) Asster Guidelines

* Based on NSW EPA (1994) Goldelines for Assessing Service Station Sites.

- Not Analysed

ND Not Detected

Coffey ##

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TABLE 4 SUMMARY OF LABORATORY RESULTS (SOIL) All results in mg/kg

Sample ID		TP7	1P7	IF4	1798A	TP9	123	TPiO
Geological Origin	THRESHOLD	FB	Føt		Dupof		Residuat	Residual
Date of Sampling	CONCENTRATION	24-Jan 02	24-Jan-02	24-Jon-02	THB	24-Jan-92	24-Jan-02	24-Jan (Q
Depib (m)		0.0 0.21	0.35-0.55	0.1-0.3	0.1-0.3	0.2.0.4	1.0-1.2	0.1-0.3
NEAVY METALS					1			-
Arsenic	20 '	4	s	5		5		3
Codmóun	31	<1	-1		व	1	4	<1 -
Chromium	400 2	12	24		22	20	25	9
Copper	100 2	67	19	5	·	8	G	1
Nickel	60 °	6	6	1	1 1	4	3	<1
Lead	300	253	609	17	13	···· ··	11	8
Zine	200 2		165	- 11	1 11	10	15	
Mercury In Solt	1 ²	0.1	0.1	<0.1	<0.1	⊲.i	<0.1	-01
TOTAL PETROLEUM HYDROCAR	BONS							
C6 - C9 Fraction	65 1		•		-			
GID - C14 Fraction		1		·	<u> </u>		<u></u>	<50
C15 - C28 Fraction		· 1		<u> </u>	· · · · · · · ·	1.	· · · · · · ·	<100
C29 - C36 Fraction		· ·		-	· ·		<u> </u>	<100
Total C10-C36	1608 3	<u> </u>	•		1 .	<u> </u>		ND
BTEX	- ·			/- ·		!	····	
Benzena	<u>ا</u>	1		· ·	-			48.2
šoluona.	130 4	·····		· ·				<0.2
Elhythenzene	50 ³	1.1		<u>}</u> ·		·	·	<0.2
Xylene	25		· ·	<u> </u>		<u> </u>		≪0.4
POLYHUGLEAR AROMATICS				· ·	· · ·	· ·		-90.1
Naphihalene		₹.5		· ·				<0.5
Acenaphthylene	· · · · ·	<0.5			·		-	-0.5
Agenaphthene		-48.5				<u> </u>		40.5
Fluorene		<0.5	•		-	-		···· <0.5
Phenantwood		<0.5			-			<0.5
Antiracene		<0.5	-			.		<1.5
Norashene		<0.5			·			<0.5
^o yitina		<0.5	-					-0,5
Bonzfalagifivacene	,,,, <u>,</u>	-0.5	-	-	•	-	+	-0.5
Chrysene		40.6		-	•			-0.5
Senzo(0)/Illionanthene		⊲0.5	•					⊲5
Senzo(x)Ausranthene		-0.5	-		-			<0.5
lonzo(a)pyrene	1'	<0.5	-	<u> </u>		-	·	43.5
ndeno(1,2,3,cd)pyrcna		-0.5	·	-	•			વાર6
libeor (a h)anthraceno		<0.5	•	_				-0.5
ienzo(g.h.i)perykaa		<0.5	i				·	
ola PAH	20 1	ND						ND
THER		~	·			-		
sbesios		- +		NO .	- 10		- 1	ND

NOTES:

Conventration exceeds the respective Breshold concentration Based on the Health David Sci Investigation Level in Column 1 of the MSW EPA (1998) Andron Guidefines

² Based on the Physicanisty Based Soil Investigates Level in Cohenn 5 of the NSW EPA (1998) Audior Guideines

¹ Search on MSW EPA (1994) Oxformas for Assessing Service Station States

- Not Analysed
- ND Not Delected
 - Odorovs Sample

TABLE 4 SUMMARY OF LABORATORY RESULTS (SOIL) All results in mg/kg

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E12591/1-AE 4 February, 2002

Sample ID		TPIOA	Te11	1012	11413	1 TP14	1014	1P15
Geological Gazyin	THRESHOLD	Dup of	115	Filt	- Fit	Fir	Residual	Fil
Date of Sampling	CONCENTRATION	TPIQ	24-Jan-62	24-Jan-02	24-300-02	24-Jan-02	24 Jan-02	24 Jan 62
Depth (m)	··· [······	0.1-0.3	0.1-0.3	0.0-0.15	0.1-0.3	0.0-0.2	0.8-1.0	0.1.03
HEAVY METALS		1	.					
Areenic	20,	<1	4	3	3		5	4
Codminer		<1	4	4		्य	वि	
Chreanivate .	400 ²	5	18		12	1	20	
Соррег	100 3	1	2	10	5	13	6	20
Nickel	60 [†]	<1	4	3		4	2	5
lead	300 '	4	8	44	1	57	11	272
Ziac	200 7	3	5	137	10	70	1	100
Merceny in Soil	12	s0.1		<0.1	40.1	<pre> ///</pre>	<0.1	-0.1
TOTAL PETROLEUM HYDROCAR								~9~1
C6 - C9 Fraction	65 '			<u> </u>		· ·	<u> </u>	
C10 - C14 Fraction			<u> </u>	<u> </u>			· ·	
CIS - C28 Fraction	• • • • • • • • • • • • • • • • • • • •	· · ·			<100			-
C79 - C36 Fraction	· [<100	-	I	
Tots/ C10-C36	1000 '	·· ·	-		ND ND		· ·	-
BTEX				·		····	•	•
Benzens					<0.2	<u> </u>		
Tobiene		-	₹ ·· 			•	· · · · · · · · · · · · · · · · · · ·	
Eßtyßenze ns	50 3			<u> </u>	40.2	•		-
Xylena	25 '		•	<u> </u>	40.2 40,4	•	- 	-
POLYNUCLEAR AROMATICS		-	•		4V,4		-	•
Naphthelens	i i	·	.<0.6		< 0.5		·	-05
Acenaptalhylene			<0.5		-0.5		•	<0.5
Acenaphthicno			<0.5		40.5	-	,	-40.5
Fixed contractions					~~~	-	•	
Phenanlizena	· ····		<0.5		-0.5	•	· · ·	- 40.5
Antitrecens	·]		<0.5		⊲0.5	· ·	* 	<0.5
Fluoranishene			<0.5 <0.5		<0.5 -0.5		· 	<0.5
Рукеже			. 90.5		≪0.6 ⊴0.6			<0.5 -0.5
Renz(s)anthracene		-	<0.6	· •				40.5
Chrysene	<u></u>	-	<u>~0.8</u> ⊲0.5	•	40.5 - 4.6	·	·	40.5
Benzo(b)fluoranthene			<0.5 <0.5	•	<0.5	- 1	· ·	<0.5
Benzo(k)&uoranihene	· · · · · · · · · · · · · · · · · · ·	· ·	40.5	•	<0.5	i	•	<0.5
kónzo(a)pyzene				•	<0.5	•	•	<0.5
ndeno(1.2.3.cd)pyrene	·		<0.5	<u> </u>	<0.5	•		<0.5
Xbenz(a.h)anthracenc	┨────┤		<0.5 <0.5		⊲15	<u> </u>		<0.5
Jenzolg.h (Ipozylawa] ,	-		-	49.5		·	<0.5
Reacongun niperynansi Real PAN	20 1		<0.5	· ·	-41.6	-	-	<0.5
)THER	<i>w</i>	· _		•	ND	-	•	· ND
sbestos	Ⅰ		Mp	NO.				
		ND	ND	NO	- 1	ND	-	ND

Coffey EXX

NOTES

Consentiation exceeds the respective liceshold concentration ¹ Based on the Health Based Solitivestigation Level in Column 1 of the HSIY EPA (1938) Audior Guidelines

¹ Based on the Phylotochy Stated Sel Investigation Lavel in Column 5 of the NSAY EPA (1998) Auctor Guideines

¹ Based on NSW EPA (1994) Guidelings for Assessing Service Station Siles

- Not Analysed

NO NOLOGISCIES

Odorous Sample

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TABLE 4 SUMMARY OF LABORATORY RESULTS (SOIL) All results in mg/kg

Sample 1D	·	1 011	BH2	1 8H3	3H4	885	3846	0,817
Geological Origin	THRESHOLD	Eñi	Fall	Fat			 Fal	FRI
Date of Sampling	CONCENTRATION	24-Jan-02	24-3an-02	24-Jan-02	24-Jan-02	24 Jan 02	24 Jan 02	24-Jan-02
Depth (m)		0.0-0.3	0.0-0.7	0.0 6.3	0.0 0.3	0.003	0.003	0.0-0.3
HEAVY METALS	-							
Arsenic	50,	1	5	3	4	6	5	4
Codentum	31	4		्व	4	<1	्व	<1
Chronitum	400 2	53	11	13	13	16	14	7
Соррст	103 2	45		14	20	45	35	13
Mickef	60 °	7	6	1 4	\$	9	9	t 1
Lead	300 '			213	S. 200 75			196
Zinc	200 2	12225		78	104			146
Mercury In Soll	i ²	0.5	0.2	0.2	0.1	0.2	0.4	0.2
TOTAL PETROLEUM HYDROCARI	BONS				1	1		
C5 - C9 Fraction	- 65 *	•	-	-			-	•
C10 - C14 Fraction		-		•	•	•		-
C15 - C28 Fraction		-	-	•			•	
C29 - C36 Fraction		-	-	•	-			
Fot# C10-C36	1809 3		-	•	•	-	-	-
BTEX								
8002000	1 1	•		-	-	-	-	
Toluşna	130 1	-	-	•	•	•		-
Ethylbeczens	50 ¹	-	· .	•	-	-	-	-
Xylene	25 3	•		-	-	-	-	-
POLYNUGLEAR AROMATICS								
Naphinaleno		-	-	Ŧ	•	•	•	-
Adénaphihylené		-	-	•	•	•	-	-
Açanaphthena		-	-	•	•	•	-	-
위uozene				-	-	-		-
Phenanthrene	T-01-	-	•	-	-	-	-	-
Anthracene		•	-	-	-		-	-
Fluoransical			-	•	•	•	,	
Pyrene		-	-	•	•	•	•	
Senz(s)anthracene			· ·	<u> </u>		-	-	•
Chrysene		•	·		-	-	-	•
Senzo(b)Roorantiliene		·]		-	-	÷	÷	•
Bonzojkjiluoranihane			-	•	-	•		•
Benzo(a)pyrene	15		•	•	•			
indepo(1.2.3.cd)pyrena		-	•		-		-	-]
Cibenz(a.h)entbracene	w-4	-	-		-	-	-	-
Benzo(g.h.£)perpieno	{	•	-	-				
Total PAH	20-1	•		-	-	÷	-	
OTHER								lur.
(spessos			-	ND	•	-	ND	łD

NOTES

Concentration encodes the respective fureshold concentration ¹ Based on the Modific Based Soil Investigation Level in Column 1 of the MSW EPA (1998) Audion Guideánes

^a Based on the Phyloniality Dased Sol Investigation Level in Cohern 5 of the NSW EPA (1998) Audior Guidelines

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- ¹ Dased on NSW CPA (1994) GuideRoes for Assessing Senice Station Stes
- Not Analysed
- 24D Hot Detected
 - Обнось Затріе

Coffey B

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TABLE 4 SUMMARY OF LABORATORY RESULTS (SOIL) All results in mg/kg

Sample ID		BIB	BH\$	LIF 110	Billi
Geological Origin	THRESHOLD	Fill	<u>і</u> й	Fä	្រា
Oate of Sampling	CONCENTRATION	24-Jat-02	24-Jan-62	24-Jan 02	24-Jan-02
Depth (m)		0.00.3	0.0-0.3	0.003	0.0-0.3
MEAVY METALS					1
Arsenic	20 '		3	3	5
Cadmium	3 ²	<1	<1	a	<1
Chremiun	400 7	8	11	- <u></u> 9	16
Capper	100 '	16	8	8	
fläcket	60 *	δ	2	2	2
Lead	300 '	227	133	79	112
Zinc	200 ²	152	75	45	87
klercury in Soil	1 ²	02	<0.1	<0.1	<0.f
TOTAL PETROLEUM HYDROCAR	BONS		<u>-</u>		i i
CG - C9 Fraction	65 [°]	- 1	· ·	-	-
C10 - C14 Fraction		- 1	-	-	-
C15 - C28 Fraction		1 ····· · · ·	-		
C29 - C35 Fraction		· ·	-		•
Total CHU-C36	1000 3	· ·	-	- •	-
BTEX					
Benzene		-	-	•	
Тобиеле	130 4	· · · · · · · · · · · · · · · · · · ·	•	-	
Ethylbenzene	50 3	1 - 1	. [•
Xylene	25 *	-	•		•
POLYNUCLEAR AROMATICS				·	
Naphthalens		· ·		•	
Acenaphihylene		·		•	-
Acenaphthene			- 1	-	-
fluorene		-	•		-
Priciantineno		-	-	-	
Anthracens		•		-	•
Fluoranthene		•			
Рутепе		•	- {	•	- 1
Senz(s)antivaçeos		•	-	•	-
Chrysena		•	-	•	-
Benzo(b)skoranthene		-	-	•	-
Berzo(k)fluoranthene		-	•		-
Benzo(a)pyreno	1 *	-			•
ndono(1.2.3.cd]pyreae		-	•	-	•
Dibenz(a.h)anthracena			- 1	•	•
Benzo(g.hu)perylene		-	-	•	-
Tota PAH	20 '	-	÷		-
DIRER					
Asbesioș		NKÛ	ND	ND	ND

Coffey EXX

1003682

Concentration encodes the respective Divertical Concentration ¹ Based on the Newth Based Soit Investigation Ferri In Column 1 of the NSV/EPA (1996) Auditor GuideEnes

* Bastor on the Phylodonicity Based Soil Investigation Levist In Column 5 of the NSW EPA (1998) Austor Guidelines

- ¹ Based on NSW EPA (1994) Guidelings for Assessing Service Station Siles
- Not Analysed
- ND Not Detector
 - Odoroves Sazgas

7.4 Comparison of Results with Threshold Concentrations

The following exceedances of the threshold concentrations discussed in Section 5 were observed for soil samples:

- Lead in TP2 0.1-0.35 (335mg/kg), 8H1 0.0-0.3 (336mg/kg), BH2 0-0.3 (435mg/kg), BH4 0-0.3 (320mg/kg), BH5 0-0.3 (327mg/kg) and BH6 0-0.3 (671mg/kg) compared to the human health based threshold concentration of 300mg/kg;
- Arsenic in BH8 0-0.3 (30mg/kg) compared to the phytotoxicity based threshold concentration of 20mg/kg but below the human health based threshold concentration of 100mg/kg;
- Copper in BH2 0-0.3 (219mg/kg) compared to the phytotoxicity based threshold concentration of 100mg/kg but below the human health based threshold concentration of 1000mg/kg;
- Zinc in TP2 0.1-0.35 (358mg/kg), TP4 0.1-0.3 (220mg/kg), TP4A 0.1-0.3 (308mg/kg), TP7 0-0.21 (372mg/kg), BH1 0-0.3 (296mg/kg), BH2 0-0.3 (228mg/kg), BH5 0-0.3 (264mg/kg) and BH6 0-0.3 (211mg/kg) compared to the phytotoxicity based threshold concentration of 200mg/kg but well below the human health based threshold concentration of 7000mg/kg;

TPH, BTEX, PAHs and asbestos were not detected in any of the samples analysed. Other heavy metals were detected, but below both the human health and phytotoxicity based threshold concentrations.

8. DISCUSSION

The site history study revealed that the site contained residential cottages for workers of the Commonwealth Portland Cement Works since the early 1900s. Based on the site history review, the following potential areas of environmental concern (AECs) were identified:

- Loaching or weathering of contaminants potentially contained in building material;
- Potential burial of fill material;
- Potential onsite migration of contaminants from adjacent properties.

In order to assess the above AECs for the presence of contamination, a field investigation was undertaken comprising the collection of soil samples from eleven hand auger holes and fifteen test pits auger holes at selected locations. A total of twenty-nine soil samples (plus three duplicate samples and one wash blank) collected during the field investigation were subjected to faboratory analysis for chemicals of concern.

The following subsections present separate discussions on the different AECs.

8.1 Leaching / Weathering of Hazardous Building Materials

Hazardous materials potential contained in building materials on the site and which could potentially leach or weather into surface soil could include lead from lead based paint, zinc from galvanised corrugated iron and asbestos from fibro.

The cottages on the site are of constructed of brick which has been painted. Taking into account the age of the buildings, it is considered likely that they would have been painted with lead based paint. A substantial proportion of the paint was observed to be peeling. In addition, a number of sheds located in the backyards of the site and the rooves of the cottages were constructed of corrugated iron.

In order to assess the presence of lead and zinc in soil as a result of weathering and/or leaching of lead based paint and corrugated iron, twenty-five near surface soil samples collected from the site, including some from immediately adjacent to cottages and sheds, were tested for heavy metals. A further four deeper samples were also analysed for heavy metals to assess the vertical extent of contamination.

Lead was detected in six of the near surface soil samples analysed at concentrations exceeding the human health based threshold concentrations applicable to residential sites with gardens and accessible soil. This suggests that lead concentrations in near surface soil could potentially pose a risk to human health in a residential setting with gardens and accessible soil.

Zinc was also detected in seven and copper and arsenic in one of the near surface soil samples analysed at concentrations exceeding the provisional respective phytotoxicity based threshold concentrations but well below the human health based threshold concentrations. This suggests that the near surface soil could potentially be phytotoxic to plants.

Taking into account that concentrations of heavy metals in soil samples collected from deeper than around 0.3m were below both the human health and phytotoxicity based threshold concentrations, it is considered that heavy metal contamination is likely to be limited to near surface soil (less than about 0.3m depth) and is likely to predominantly be the result of weathening/leaching of heavy metals from materials used in buildings.

Taking into account the above, it is considered that remediation and/or management of heavy metal contamination in near surface soils at the site is required for the site to be suitable for residential use with gardens and accessible soil.

A number of annexes of the cottages were observed to be constructed with fibro board which could potentially contain asbestos. In addition, it is not known if the cottages which have been demolished in the western part of the site contained asbestos. In order to assess for the presence of asbestos fibres in soil as a result of weathering of asbestos containing building materials, fourteen near surface soil samples collected from the site, including from adjacent to fibro annexes, were tested for asbestos. Asbestos was not detected in any of these samples. Taking into account that asbestos was not detected in any of the samples tested and that visual evidence of asbestos (such as fibro board fragments) was not observed in any of the test pits or hand auger holes, the likelihood of widespread asbestos containing building materials on the site is considered to be low.

8.2 Fill Material

Test pits and hand-auger holes across the site encountered fill material ranging in thickness from 0.1m to 0.75m in the western part of the site and 1.25m in the eastern part of the site. The fill typically comprised sandy sitt with some gravel, charcoal and trace plastic, glass, bricks and coal observed at some locations.

Overall, twenty-six soil samples collected from the fill material were subjected to laboratory analysis. Many of these samples were also near-surface samples. Four fill samples were analysed for TPH and BTEX, nine for PAH, twenty-six for heavy metals and thirteen for asbestos.

Heavy motals were detected at concentrations exceeding the human health and phytotoxicity based threshold concentrations, but as discussed in Section 8.1 all of these exceedances were in near surface samples and are considered likely to be associated of leaching/weathering of hazardous building materials. TPH, 8TEX, PAH and asbestos were not detected in any of the samples analysed.

Taking into account the above discussion, the likelihood of fill material at the site containing significant contamination exceeding criteria for residential sites with gardens and accessible soll is considered to be low.

8.3 On Site Migration of Contamination

Potential offsite sources of contamination include:

- A service station located across Willawa Street to the south of the site;
- The Cement Works Facilities located to the east of the site including a workshop to the north of the eastern part of the site;
- The annex building located between the western and eastern parts of the site which was formerly used as a munitions store.

Taking into account the topography of the site and surrounding land, the distance of the cements works facilities from the site and that no visual or olfactory evidence of contamination was identified in any of the test pits or hand auger holes, the likelihood of significant onsite migration of contaminants from offsite sources is considered to be low.

9. CONCLUSIONS AND RECOMMENDATIONS

Based on the above, it is considered that the site is likely to be suitable for the proposed residential use with gardens and accessible soil (home grown produce contributing less than 10% fruit and vegetable intake, no poultry) subject to:

- Further delineation then remediation and/or management of heavy metal contamination in near surface soil across the site;
- Undertaking a hazardous materials assessment of remaining buildings on the site and managing any hazardous materials identified appropriately to prevent recontamination of near surface soils.

It is recommended that additional sampling and analysis be undertaken by Coffey or another suitably qualified environmental consultant to further assess the extent of heavy metal in near surface soil. Following the additional sampling and analysis, it is recommended that a remediation action plan (RAP) be prepared outlining remediation and validation procedures for the heavy metal contaminated near surface soil.

It is considered that the most feasible remediation option for the heavy metal contaminated soit is likely to be excavation of the contaminated material and then either offsite disposable of the material to a suitably licensed landfill or rouse of the material on a part of the cement works which will be used for less sensitive use such as commercial/industrial.

Prior to removal of the soil from the site it would need to be classified in accordance with the NSW EPA (1999) Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes.

It is important to note that contamination hotspots not detected during this investigation may be present on the site. If during redevelopment of the site suspicious material (e.g. oily or odorous material, drums, tanks, metal or plastic chemical containers, ash, coke or brightly coloured material) are encountered, work in that part of the site should cease and advice should be sought from Coffey or another suitably qualified environmental consultant.

10. LIMITATIONS

The findings contained within this report are the result of discrete/specific sampling methodologies used in accordance with normal practices. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

11. REFERENCES

NSW EPA (1999). Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Westes

NSW EPA (1997). Guidelines for Consultants Reporting on Contaminated Siles

NSW EPA (1998). Guidelines for the NSW Site Auditor Schemo

NSW EPA (1995). Sampling Dosign Guidelines for Contaminated Sites.

NSW EPA (1994). Guidelines for Assessing Service Station Sites.

Peter Fenwick (1993). A Heritage Assessment of the Portland Cement Works, prepared for Blue Circle Southern Coment Limited

For and on behalf of COFFEY GEOSCIENCES PTY LTD

er Ber

ROSS BEST Senior Principal

JOSHUA LASKY Project Manager

Information Information about your Coffey Environmenta

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of land and to delays in the redevelopment of land. These uncertainties are an inherent part of dealing with land contamination. The following notes have been prepared by Coffey to help you interpret and understand the limitations of your environmental site assessment report.

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey and applies only to the site or area investigated. For example, the purpose of your report may be:

- To assess the environmental offects of an on-going operation.
- To provide due diligence on behall of a property vendor,
- To provide due diagence on helialf of a property purchasor.
- To provide information related to redevelopment of the site due to a proposed change in use, for example, industrial use to a residential use.
- To assess the existing baseline environmental, and sometimes geological and hydrological conditions or constraints of a site prior to an activity which may after the sites environmental, geological or hydrological condition.

For each parpose, a specific approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible, quantify risks that both recognised and unrecognised contamination pose to the proposed activity. Such risks may be both financial (for example, clean up costs or limitations to the site uso) and physical (for example, potential health risks to users of the site or the general public).

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Cotley to be advised how time may have impacted on the project and/or on the property.

Interpretation of factual data

Unvironmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect flekf measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their fikety impact with respect to the report purpose and recommended actions. Actual conditions may differ from these inferred to exist, because no professional, no matter how well qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be dono to change the actual sito conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, parties involved with kind acquisition, management and/or redevelopment should retain the services of Coffey through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other problems encountered on site.

Your report will only give pretiminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered with redevelopment of on-going use of the site. If another party undertakes the implementation of the recommendations of this report there is a disk that the report with be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and parsons

To avoid misuse of the information contained in your report it is recommended that you confar with Colley before passing your report on to another party who may not be familiar with the background and the purpose of the report. In particular, a due cilligence report for a property vendor may not be suitable for satisfying the needs of a purchaser. Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misiaterprotations of a report. To help avoid misinterpretations, rotain Coffey to work with other professionals who are affected by the report. Have Coffey explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.





Data should not be separated from the report

The report as a vehicle presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Logs, figures, laboratory data, drawings etc. are customerity included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Contact Coffey for additional assistance

Colfey Is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to land development and land use, it is common that not all approaches will be necessarily dealt with in your environmental site assessment report due to concepts proposed at that time. As a project progresses through planning and design toward construction and/or malatenance, speak with Colley to develop alternative approaches to problems that may be of genuino benefit both in time and cost.

Responsibility

moortant information about your Coffey Environmental Site Assessment

Environmental reporting relies on interpretation of factual intermation based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplinos. This has often resulted in claims being lodged against consultants, which are unfounded. To help provent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate itabilities from Colfey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is latended to help all parties involved to recognise their individual responsibilities. Read alt documents from Coffey closely and do not inositate to ask any questions you may have.



E12591/1-AE 4 February, 2002

APPENDIX A

EPA NOTICES



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EPA POLLUTION LINE

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CERTIFIED MAIL Blue Circle Southern Cement Ltd P O BOX 42

WENTWORTHVILLE NSW 2145

Our Reference: 260141/D1/ Not. Nos. 002046

Your Reference: UBL # 3118; Nolice # 410

17 AUG1995

NOTICE UNDER SECTION 35

OF THE ENVIRONMENTALLY HAZABDOUS CHEMICALS ACT 1985

WHEREAS -

A. Blue Circle Southern Cement Limited (BCSC) is the occupier of premises at Williwa Street Portland more fully described in the Schedule and known as Portland Cement Works (the 'premises').

B. The Environment Protection Authority (EPA) has reasonable grounds to believe that soil and water on the premises are contaminated with heavy metals and may be contaminated with polycyclic aromatic hydrocarbons (PAHs) as a consequence of cement manufacturing and associated operations on the premises.

In accordance with the powers vested in the EPA by the provisions of Part 5 of the Environmentally Hazardous Chemicals Act 1985 and section 35 in particular, the EPA directs BCSC to:

1. Prepare and submit to the EPA by 17 October 1995 a draft sampling and analysis protocol. The draft protocol should be prepared by suitably qualified persons and include a proposed timetable not extending boyond 17 January 1996 for sampling and analysis of waters, soil and sediment and carrying out a hydrological study over the whole premises in the manner described in this nolice:

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a) all sampling and analysis must be carried out in accordance with:(i) "Test Methods for Evaluating Solid Waste" (SW-836), 4th Edition (1992), Office of Solid Waste and Emergency Response, USEPA, or a NATA endorsed complementary method; or (ii) "Standard Methods for Analysis of Water and Wastewater" American Public Health Association (APHA), 18th Edition (1992).

2. Upon approval by the EPA and in accordance with the draft protocol as amended, if relevant, collect samples of water, soil and sediment from all surface waters, the floor sediments of all water filled quarries and storages, and all fly ash handling and storage areas on the premises. Samples must be taken prior to any removal of surface or subsurface contamination. The samples shall be analysed for a range of organic and inorganic species. The analysis shall include a full range of metal species, PAHs, organochlorines and total phenolic compounds.

3. Submit to the EPA by 17 January 1996 one or more reports:

(a) detailing the dates and locations of all sampling, the results of the analyses and their interpretation; and

(b) indicating the relationships between groundwater, the water currently in the quarries, and surface waters.

Prepare and submit to the EPA by 17 January 1996 a draft remediation plan, including consideration of on-going monitoring both on and off-site.

5. The EPA must be notified in writing at least 2 months prior to any dealings or proposed dealings affecting the land title to the premises or the tenure of BCSC, including with regard to the renewal, transfer or request for cancellation of any authority under the Mining Act 1992.

Note: If you neglect or fail to comply with this notice, you may be prosecuted for breaching section 35(1) of the Environmentally Hazardous Chemical Act.

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Page 3 of 3

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NEIL SHEPHERD

Director General

(signed 17/08/1995)

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RICHARD WHYTE

REGIONAL MANAGER

CENTRAL WEST

(By Authorisation)

SCHEDULE

Land including:

Lot 1 DP 842890 Lot 2 DP 749903 Lot 3 DP 749905 Lot 4 DP 749906 Lot 5 DP 749907 Lot 6 DP 749908 Lot 7 DP 749909 Lot 1 DP 109595 lot 24 Sec 46 DP 758855 Por 53 Por 104 Por 174 Part Por 52 PO 57/15 PO 79/3 ML 195 ML 411 ML 804 PLL 1132 ML 2806 ML 2851 ML 2906 ML 2941 ML 5673 PLL 953 ML 410 MPL 1098 ML 3263 PLL 3576 ML 306 MPL 393 ML 2949 ML 3177 ML 3208 ML 3209 ML 2851

cc Greater Lithgow City Council and Department of Mineral

Resources

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Page 1 of 2

REGISTERED MAIL

General Manager Blue Circle Southern Cement Ltd Powers Road SEVEN HILLS NSW 2147

ENVIRONMENTALLY HAZARDOUS CHEMICALS ACT, 1985 NOTICE UNDER SECTION 35

WHEREAS:-

5

- A. Blue Circle Southern Cement Ltd (ACN 008 421 761) is the occupier of the premises located at Williwa Street Portland, more fully described in the Schedule and known as Portland Cement Works (the 'premises').
- B. The premises were deemed to be contaminated with heavy metals and polycyclic aromatic hydrocarbons (PAHs) in soils and waters, as a consequence of cement manufacturing and associated operations on the premises.
- C. Notice number 410 pursuant to Section 35 of the Environmentally Hazardous Chemicals Act 1985 was served on Blue Circle Southern Cement Ltd, the occupier of the premises, on 17 August 1995. The notice specified requirements for the investigation of soil, water and sediment contamination, and the subsequent preparation of a draft remediation plan.
- D. All the conditions of Notice No. 410 have been complied with.

TAKE NOTE THAT:

In accordance with the powers vested in the Environment Protection Authority (EPA) by the provisions of Section 35 of the Environmentally Hazardous Chemicals Act 1985, the EPA hereby revokes Notice number 410 dated 17 August 1995.

NEIL SHEPHERD Director-General

(signed 6 Oct 1999)

CATHY DYER Manager Contaminated Sites (by delegation)

ac, EPA CLM Act record EPA Regional Manager Central Wost Lithgew City Council

NOTE:

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The EPA must be notified in writing at least two months prior to any dealings or proposed dealings affecting the land title to the premises or the tenure of Blue Circle Southern Cement, including with regard to the renewal, transfer or request for cancellation of any authority under the Mining Act 1992.

SCHEDULE:

Land including:

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Lot 1 DP 842890 Lot 2 DP 749903 Lot 3 DP 749905 Lot 4 DP 749906 Lot 5 DP 749907 Lot 6 DP 749908 Lot 7 DP 749909 Lot 1 DP 109595 Lot 24 sec 46 DP 758855 por 53 por 104 por 174 part por 52 PO 57/15 PO 79/3 ML 195 ML 411 ML 804 PLL 1132 ML 2806 ML 2851 ML 2906 ML 2941 ML 5673 PLL 953 ML 410 MPL 1098 ML 3263 PLL 3576 ML 306 MPL 393 ML 2949 ML 3177 ML 3208 ML 3209 ML 2851

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APPENDIX B

TEST PIT AND HAND AUGER HOLE LOGS



Soil Description

DEFINITION:

In orginopsing terms soll includes every type of uncemented or partially comprised morganic or organic realization line by ground. In practice, if the realerial can be remounded or disintegrated by hand is lis field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL & SOIL NAME

Soils are described in accordance with the Unified Soil Classification (UCS) as shown in the table on Show 2.

PARTICLE SIZE DESCRIPTIVE TERMS

NAME	SUBDIVISION	SIZE
Bookders		>200 rmm
Cobbles		63 ave to 200 mm
Gravel	coavse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 pm to 2.36 mm
	medium	200 pm to 600pm
	lino	75 jum to 200 jum

MOISTURE CONDITION

- Dry Looks and tools dry. Cohesive and comented soils are hard, triable or powdery. Uncernerated granular soils run keety isrough hands.
- Notst Sali fools cool and darkened in cobur, Cohesive solis can be moulded, Granular solis fond to oppere.
- Wet As for moist bat with free water forming on basds when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNORAINEO STRENGTH 6 ₀ (kPs)	FIELD GUIDE
Very Soft	<12	A finger can be pushed wait into the soil with time affort.
Soft	\$2 - 25	A linger can be pashed into the soil to about 25mm depth.
Firm	25 - 50	The soil can be indented about 5ram with the thoma, but not percented.
SHI	50 - 100	The surface of the soli can be indented with the thumb, but not penetrated.
Very Stiff	100 - 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the Burshamit,
Friatole	-	Crumbles or powders when sorapod by thomboail.

DENSITY OF GRANULAR SOILS

 TERM	DENSITY INDEX (%)
Very looso	Less than 15
Loose	45 - 36
Medium Donse	35 - 6 5
Dense	65 ···85
Vwy Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MEROR COMPONENT IN:
Trace of	Presence just detectable by foct or eye, hut sol properies little or exo different to general properties of primary component.	Coarse grained soits: < 5% Fine grazsod soits: < 15%
With some	Presence easily detected by feel or eye, solf properties little deferent to general properties of primary component.	Coarse grained sols: 5 - 12% Fine grained solls: 15 - 30%

SOIL STRUCTURE

	ZONBIG	Í CE	MENTING
t.ayers	Continuous across exposure er sample.	Weakly cemented	Easily broken up by hand is air or water.
Lenses	Discontinuous layers of tenticular shape.	Moderately comented	Elfort is required to fureak up the solit by fuend in siz or water.
Pockets	irregular inclusions of different material.		

GEOLOGICAL ORIGIN

WEATHERED IN PL	ACE SOILS
Extremoly weathered material	Structure and fabric of parent sock visible.
Residual soil	Structure and fateric of parent rock not visible.
TRANSPORTED SO	ILS
Accean soil	Deposited by ward.
Alluviai soè	Doposited by streams and stvers.
Colkasiai sož	Deposited on slopes (transported downstope by gravity).
FII	Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
Lacustrine soil	Deposited by lakes.
Marino soë	Deposited in occan basins, bays, beaches and estraries.



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		N	Nant -	E		- - 0.5			FILL: SILTY CLAY Low plasticity, dark bro- fine to cosrse gravel comprising coal, chan- silistone. Trace of roots and ash, trace of n plasticity, orange pode of day.	wa somo M coat, and pedium			_	LL	
				, Iţ					FILL: CLAY Medium to high plasticity, fight with orange mollics. Source black ash end o CLAY: Modium to high plasticity, orange, to coarse gravel comprising sillstone. Boretiste BH6 forzinated at 0.8m	harcost.			R	ESIDUAL	
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			M . ACON	E	RL				colour, secondary and minor components FIEL: GNAVELLY SILTDark brown with trace of grained save, Gravel fine to coarse, comprising limestone, and trace of siltstone. FILL: SILT Creans, trace of black astr. Trace of low plasticity clay and trace of medium graver, Comprising of Errestone and shale (B.D. Borchold BEIZ termitrated at 0.75m	it fund	ĕ8 ₩					ž	
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n K 914		exit		cavation		horsog stætige	N	"	Upp UAXESUAGed Sample 50cm diameter Upp undisturbed sample 53cm diameter D disturbed sample	nośł denosty based ori u system		assaicati	66 1		VS veg S soft F fam	
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<u>e</u> :	_	_	n i T	nfor	mation	-		mat	1	ubstance		-1	~ ~				·····	
method	1	c penetration	support	water	notes samples, tests, etc	RL	Geptia metros	graphic log	diassification symbol	naterial seë type: plasticity or particle characteristic selour, secondary and minor components	I	and tion	consistency/ density index	100 H Pand		addition	acture and Al Observations	
[<u>2</u> 2	20222205		N		E			*		FALL: TOPSOIL Sill, groy, some roots. SiLT: Crosm with some derk-brown insect / roo buzzow motiles, some medium grained sand, ha	ace of	M				RESIDUAL	· · 	_
				Observed			0. <u>5</u>	***		roots. Becoming yellow brown with orange-brown mot	Nies at							-
				8						VD.540 CLAY: Medium plasticity, pase orange-brown. T								
	1000			Nore			1. <u>0</u>			of roots. Some dark red-brown medium to fine grained g	wawd							-
	10101			-	ε					comprising ironations @ 1.0m								
	Ň.		-				1.5	1112		Test pit TP8 terminated at 1.5m								
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	Clie	_			_				olici				Office Date s	•		E1259 24.1.20	—— —
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	Tes	t pit l	ocatio	3UI	Ref	er (o	Fig	ure 1	r				Check	ed by	<i>r</i> :	JMC	- U
	cqui	pment	iype a	and mo	idel:	BACK	HOR			Pil Orientation: -	Eissling: M	9			R.L.	. Senface: 1	NM
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	method	penetration	Ľ	58	rotes rapies, ets, atc		depth	aphic log	dassification symbol	material	. ಲಾಖಪರಣೆನಗ್ಗಡು	moiature condition	consistency/ censity incex	a hand	a		iclure and al observations
			N N N N N N N N N N N N N N N N N N N		E		1.0 1.5 2.5 3.0 3.5			colour, secondary and min FILL: TOPSOIL S8, brown, frace sand, some roots, one nusly and SILT Cream, some dark red-brow large neit becoming red-borws are dopts. CLAY: Medium plasticity, pole gir mottles, trace of mots.	of frae greined or त कालीles, one st more clay fike with	- M				TR.	
VZ TESTPIT E12501.GP3 COFFEY.GDT 01.02.02	mətin N X Dit	04 07 112	isting e Kitinge			реле	spring Instice	1	ia)	hóšes, samples, lesta V _{s.} undislumbed sample 53mm U _{s.1} endistumbed sample 53mm O dislumbed sample - *	iamelor soll dear	rigition	ntoota and			consistency/d VS S F	icasity index very soft soft
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Coffey Geosciences Pty Lt	d ACN 056 335 516	Excevation No. TP10
Engineering log - Ex	cavation	Sheet 1 of 1 Office Job No.: E12591/1
Client: Barry F Cost	ar Solicitors	Office Job No.: E12591/1 Date started: 24.1.2002 Date completed: 24.1.2002 Loggod by: KME/JB Checked by: 1/21/2
Principal:		Date completed: 24.1.2002
Project: Environment	tal Site Assossment, Willawa Street, Portland	Loggad by: KME/JB
Test plt location: Rofor to Figu		Chocked by: JMV O
equipment type and model: BACKHOE	Pit Orientation: - Easting: m	R.L. Surface: NM
	im wide Nortking: m	dalum:
excavation Information	malarial substance	
경 전 환전 11 samyses, 이 환전 12 samyses, 이 환전 12 samyses, 이 한 전 12 tosts, etc. E 1 2 3 편 화 172, restress	G E material 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Т. N PP E	FILL: YOPSOIL Still, grey-brown, some roots, trace M coarse gravet comprising linestone, trace of charcost, StLT: Cream with brown itsect / root infited but/ows, trace of roots. CLAY: Medium plasticity, orange-brown and grey, trace of red-brown mobiles trace of roots, trace of medium gravet comprising situations.	
	Test pà TP 10 lerminated at 1.2m	
method N natural exposure X evisiong excevation Bit backhoe bucket B bulkforer blade R dippor E excevator Weder for water the water the water the Weder later the W	not K nofusal M molsi Not Kowa Kowa Kow	n VS very solt & classification S soft F firm SL soft VSL vory soft H Land Fb kisoto VL very loose in L loose

Form GEO \$,2 199U# 3 Ray,2 TESTPET E125011.GPJ_COFFEY.GDT_04.02.02

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		ent:					Cos					•••••	Office Date s			.:	E12591/1 24.1.2002	Coffey
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		avatio cava			ons; rmation	2m fo	ស្នេ បំរ	_	·	Nord	izing; m				de	Rume		
	method	2 penetration	SUDOOL	va:er	notos səmptəs, tosis, etc		depth nteires		classification symbol	materia) soil type: plasticity or particle character colour, secondary and minor compon	vistics, ients.	moisture condition	consistency/ density index	1	ko v penetro-		structure and additional observat	uona
	蓝				Ğ		- 1	***		FILE: TOPSOIL SA, some roots, frace of co sand, some concrete.		м		T,		FI		
				None Observed			0. <u>5</u>			SiLT Cream, some modium to coarse grave convising sillstone and timestone trace goot CLAYEY SILTY GRAVEL: Pale brown, trive coarse grained comprising sestone, quartz kimostone.	ts. to and		MD F			RE	SIDUAL — — — —	
		20100000000000000000000000000000000000		Ň	Ε		1.0			CLAY: Grey with orange-brown and red-bro motiles. Trace of the grevel comprising sill trace of roots,	wn Islono,							- - -
-							1.5			Tost pit TP12 terminated æl 1,3m								
							2.0											-
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Forth GEO 5.2 Iseue 3 Rev.2 1ES	meth N X B R E		ixista Iackh	se ba zer bli	avaton Kel	S i party 1 2 34 wate yate Y		prworta Now		noles, samples, lests U _{so} taxisturbed eanple Sitnan diamator U _{II} condictived eanple D disturbed eanple V vano shour (d*a) Bs Lick eangle E enviconnental asciple R rolust		ption Initial di				V S F S V H N V L	រ	

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Coffey Geoscienco	s Pty Ltd ACN 056 335 514	Excavation No. TP13
Enaineerina l	og - Excavation	Sheet 1 of 1 Office Job No.: E12591/1
	ry F Casier Solicitors	Office Job No: E12591/1 Date started: 24.1.2002 Date completed: 24.1.2002 Id Logged by: KME/JB Chockod by:
Principal:		Date completed: 24.1.2002
	rironmental Site Assessment, Willawa Street, Portlan	nd Logged by: KME/JB
•	er to Figure 1	Chocked by: JAL O
equipmont type and model:	RACK/IDE Pre Orientation; Easting: m	n R.L. Sudaco: NM
axcavation diatensions:	2mileng 6.5m vide Northing: n material substance	ก ถึงอักษระ
excavation information	nateriat 20 20 20 20 20 20 20 20 20 20 20 20 20	나 나 나 나 나 나 나 나 나 나 나 나 나 나 나 나 나 나 나
	PRLETOPSOIL Brown, some roots, lawe charcoal yand coarse sand. FILL: SILT Cream some gray motifies in insect/root Uninwes, trace code, trace charcoal. Becoming orange brown with depth. CLAY: Medium plasificity, gray with orange-brown and ref toown with dident and ref too of medium gravel compatibility linvestone in silfetone fragments. 1.0 1.0 2.0 3.0 3.5 3.5	
Sketch method N nakurat exposure X ovisting ancayation Bit backhoe buckot B bylidzer klade R ripper E okceyator	S shoring N m2 Use undistinted semple 50mm diameter ±011 der penetralioni Use undistinted semple 63mm diameter bacod c 2 3 4 V vane tilest (log3) semple system 1 2 3 4 V vane tilest (log3) motistuted motistuted 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	61 \$01

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Co	offey	y G	ieo:	sclenco	s Pl	ly Lt	d AG)N 056	335 515		Excav	ation	No.	TP14	- 1
E	ng	in	ee	ring l	og	- Ex	cca	vat	ion		Sheet Office		<u> </u>	1 of 1 E12591/1	
	ent:							olici			Date a			24.1.2002	
Pri	ncipa	11:									Date o	omp	leter	: 24.1.200 2	1
Pro	oject:			Eav	dron.	men	tal S	ite A	ssessmont, Willawa Street	Portland	Logge	d by:		KME/JB	<u> </u>
Te	st pit	loca	tion	: Ref	er to	Figu	ure 1	1			Check	ed b	y:	JMレ	C
				i model:	8ACK					islingt m				Surface: NM	
	avalio Cava			lons; ormation	2m lon	1g (0,1	_		ubslanco	រលិសរថ្ង; ៣			datu	EF43:	
method	12 peretration	Succon	water	dotes samples, tests, etc		dep U s metres	graphic log	diassification symbol	dateria soittype: plasticity or particle chara colour, secondary and minor comp	Jeristics, 20 Rogents, E	condition consistency/ decisity index	tic thank		structu additionat of	
7		N	Noce Observed	Е 		0.5			FILL: TOPSOIL Sill, brown, some roots. FILL: SILT Creater wills grey motilos, trac one plastic and metal water pipe. GRAVELLY SILT: Orange-brown, gravet to coarse and comprises sillstone, konst timestone peobles, some clay. Test pit TP f4 feaminated at 1. Im	is medium				FILL	
						15 2.0 2.5 3.0 3.5 4.0			-						
S		Ł													
meU N X DH 8 R G		oxisti Locid Duilă rippe	ing ex hoe tx ozer b		perme 1 2 ₩1 ₩atk	etration 3 4 -sx	nging to lusse wal shown	ni) Ka	notes, serinfév, leete M ₂₀ undésluitoid sampto forme diemotor G ₂₀ undésluitoid sampto forme diemotor D distution sampto V vane sinear (\$22) Ris buik sampte C erraitonmental sampte R refusai		n di dassifica Mi			S soft F Error St affr VSt very H harr Fb Mat VI. very L teor MD meter D con	rson rson ≴ ste rtooso ke Ruendons≤o

C	of	fe	y (Gε	10 5	clence	es P	ty £t	d A	:N 056	335 516		ŀ	Exceva	สอด	No		
Ë	:n	q	in	ie	e	ing l	oa	- E	xca	vat	ion			Sheet			1 of 1	
÷	lier		•					Cos						Dífice Dato s	• • •		E12591/1 24.1.2002	Coffey
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Pr	ojo	oct				Env	dron	imen	tal S	ite A	ssessment, Willawa Stroot, Po	ortland	Ł	.oggeo	i by:		KME/JB	Q
Te	est	pšť	ю	al	ion:	Ref	or to	o Figi	uro 1				c	Checka	ed by	Y:	JAC	0
٥q	juip	สาย	rsi ty	(pe	end	model:	BACK	NOE			Pil Oriostetion: - Easting					R.L	. Surface: NiM	
_	_				nsk nfo	ns: ratafion	2m lo	ng 0.			Northia	ig: ni				dal	16(2)	
method		pervetration		support.	water	notos samples, tosis, eic		deptia	aphic Jag	dassification symbol	material soil from plasticity or particle characterist	lics	moisture condition	consistency/ density index	k		structure atiobasi abs	
E Ta		12	- 1	Π N	3		RL	metres	5000 5000	ህቆ	coloss, secondary and minor component F/LL: TOPSOIL Sill, grey-brown, some roots, I		681 M	85	1 E	99 11	FILE	
10	200					Е		-	***		fine sand, fraces of glass.							
	1444223342235255555888701				None Observed			0. <u>5</u> - 1.0			FILL: StLTY CLAY Create-brown, fow plasticity (races of charcoal, trace of rooks, trace of fine) comprising sandstorne. Becoming orange-brown with depth. One metal trateog form wide pick.	gravel						-
	22022			}	ž	E]		***				ŀ					-
	20000	32020						15			CLAY Pale grey with red-brown and while mot motium plasticity, some coarse gravel compris	üles, ting					RESIDUAL	· · · · ·
					[E		-			limostova.							-
								2.0 2.5 3.0 3.5			Test på TP15 lerndaaled al £.7m							-
	ike	tch	.l					4.0										
meli	hod							port				cineshicutio		701e euq			constatency/GAn64ty	
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E12591/1-AE 4 February, 2002

APPENDIX C

PID RESULTS



form result		otoionisat	ion de	etector		}}}	shaet / ol 3
cheat: B	any F Coster	Sol-cib-s				ottice: (hold C'	រ
periopal	I					ome: 24 J	AN 2002 ·
project (6	A				;	ph: RVIC	
location.	MARCH S. J. W	alled SAU	r, Uina	014		checked by:	
	number				tanı	p voltage:	
last check	edicalibrated:	JAN, 2002		catt	oration gas ty	pe/concentratio	no <u>Po</u> rta de la secondad
lucetion number	test type*	bare at somple probe dapth (m)	duration (mins)	background rending (ppen)	last reading lppml	maxiawm ceeding (ppm)	nolės
7P1	H.S	0.8 -1.2	3	0.1	8.0	16.0	
71942	1	0.1-0.35			. 13.4.	25.8	
102		0.4-0.65			16.2	211	
TP 2		1.0-1.3			\$13	26.2	
TP3		0.25 -0.45			15.1	19.8	·· · _ ·· · · ·
7193		1.0 -1.2			13.2	23.9	
7P4		0.1-0.3			16.9	23.3	
7P4		0.8 -1.0			10.0	17.6	
TPG		1.0 -1.3			9.1	22.9	
1195		1-25-1.55			8.4	11.9	
TPL		0.25 -0.45			16.7	25.7	
TP6		0.8 -1.1			17.5	22.8	
71"7		0.35-0.55			22.1	52.0	-
TP7		1.0 -1.3			13.5	27.7	
TP8		0.1-0.3			11.2	15.4	
TPS		1.0-1.3			13.5	49.2	
TP9		0.2-0.4			14.0	29.0	
7/1		1.0 -1.2			17.4	24.2	
Illo		0.1-0.3			18.9	28.9	· · · · · · · · · · · · · · · · · · ·
TP10		0.8 -1.0			14.4	30.1	
117		0.0-0.21			18.2	26.3	
TRI		0.1-0.3			3.1	6.9	
TPU		0.8-1.2	j ↓	¥	23.5	28.4	

Doc. No. 0P15/1-E5.1

* Fill in the test type as follows:-

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Rev: Ø

811 (🔰 🐱 soil gas probe sample; (soil type - unified classification system in parentheses)

HS () = headspace sample (with soil type-unified classification system in parentheses)

Date: June, 1995

torm Eb. (- photoionisation delector results

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client: K	bury F Gaier	Solutors				attice: (not) (
principal:	1					date: 24 .	JAN 2002
project E	SA					by: Karz	
location:	POLITION 52. U	wellowed state	т,Цін	(ÓIV	_	checked by.	
	number. Milinise					p voltage:	
last check	ed/calibrated: 33	JAN 2002		calit	pration gas ty	pelconcentrat	100. Ing
focation number	test tγp¢¹	bore or sample probe depth (m)	duration (mins)	background reading (ppm)	last roading (ppm)	maximum reading (ppm)	notes
TPIL	H.S	0.0-0.15	3	0.1	13.1	19.8	
7912		1.0-1.3			8.3	26.0	· · · · · · · · · · · · · · · · · · ·
7713		0.1-0.3			9.6	17.3	
TP13		1.0 -1.3			11.8	18.7	
7714		0.0-0.2			9.0	10.9	
71914		0.8-1.0			23.3	29.3	
TP15		0.1-0.3			20.4	25.4	
7815		1.0 -1.2			1.8	18.2 .	
1115		1.5 4.7			14.0	19.5	
641		0.0-0.3			10.4	14.9	
OH2		6.0 - 0.3			10.7	14.6	
6 H3	·	0.0-0.3			6.5	14.2	
1844		0.0-0.3			12.5	17.6	-
6#5		0.0-0.3			9.1	12.6	· · · · · · · · · · · · · · · · · · ·
6415		6.5-6.6			13.5	17.3.	
SH6		0.0-0.3			5.8	14.0	
<i>611</i> 6		6.5 -0.8			4.9	15.6	
<i>6#</i> 7		0.0-0.3			17.5	20.q	
KH7		0.5-6.75			15.1	23.7	· · · · · · · · · · · · · · · · · · ·
CH 8		0.0.0.3		 _	4.5	15.0	<u>.</u>
\$H\$		05-0.65		<u>_</u>	8.2	16.0	
18 <u>4</u> 19		06-0.3			18.6	20.8	· · · · · · · · · · · · · · · · · · ·
5/19	J	0.5 -0.7	1		16.8	28.2	

*Fill in the test type as follows:-

BH () = soil gas probe cample; (soil type - unified classification system in parentheses) HS { } = headspace sample (with soil type-unified classification system in parentheses)

Dec. No. 0P15/1-E5.1

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Rev: O

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torm ED. (- photoionisation detector results

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ринсира	1					date: 24	JAN 2002 ·
project E	SÁ					bv: Kale	
	Pention 52. L	weren state	т, Цана	ÓIV		checked by:	
	manihiti jogo 52				iam	p voltage:	
lasi checi	ked/calibrated: 7, - 3-0	YAN 2002		calib	ration gas ty	pe/concentrat	ion: ICA Source is
location number	test type*	bore or sample probe depth (m)	duration (mins)	background reading (ppm)	lest rending (ppeu)	maximum reading (ppm)	notes
BH 10	<u>H.</u> 5	0.0-0.3	3	0.1	10.0	11.3	
18 H II	H.5	0.0-0.5	3	0.1	12.2	23.5	·
							
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*Fill in the test type as follows:-

Bit () = soil gas probe sample; (soil type - unified classification system in parentheses)
 ((S () = headspace sample (with soil type-unified classification system in parentheses)

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E12591/1-AE 4 February, 2002

APPENDIX D

LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS



Coffey Geosciences Pty Ltd ACHONG 336 516

Geolechnical | Resources | Environmental | Technical | Project Management



Fmail sydney@colfey.com.au

Facsimile Transmission

То	ALS Environmental	From	Kylle Eckersløy
Atlention	MICHAEL HEERY	Dale	25 January, 2002
Facsimile number	8784 8500	Our Reference	E12591/1AD
CC		Number of pages	Including this page 2
Subject	NEW IDENTIFICATION NAMES F	OR SAMPLES	

Note. If you do not receive 1 page(s) including this one, please telephone COFFEY on the above number as soon as possible, important. The contents of this facsimile (including attachments) may be privileged and confidential. Any unauthorised use of the contents is expressly prohibited. If you have received the document in error, please advise us by telephone (reverse charges) immediately and then shred the document. Thank you,

Dear Michael,

As discussed, we require those soil samples submitted to you under job E12591/1 renamed. Please amend the sample names according to the following table.

NEW IDENTIFICATION NAMES FOR SOIL SAMPLES

Original Name	To be Changed to
TP1	TP1 (unchanged)
TP4	TP2
TP6	TP3
TP8	TP4
TP10	TP5
TP12	TP6
TP14	TP7
TP15	TPa
TP16	TP9
TP17	TP10
TP18	TP11
TP19	TP12 .
TP21	TP13

Coffey Geosciences Pty Ltd ACH 4056 335 546

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Original Name	To be Changed to
TP22	TP14
TP23	TP15
8H7	8H1
8148	BH2
BH9	BH3
81110	8H4
BH1t	8145
61{12	8H6
ВН13	BH7
BH14	8118
BH15	BH9
BH16	8H10
8H17	8611

If you have any questions regarding the above please call me on 9888 7444.

Cheers,

Kylia

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Special Laboratory Instructions: 1/1 - 5, TA, WDA, PLO	STAN	DAPLO S						JOB NUMBER MUST BE
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SAMPLE RECEIPT ADVICE

Page.

COMPANY: COFFEY GEOSCIENCES PTY LTD ATTENTION: MR JOSHUA LASKY DATF: Jan. 29, 2002 FROM: Karin White, ENV SYDNEY

S (Enviro)

ALS has received samples pertaining to your reference: S0703

For future reference the batch number on this order is: ES31740

All samples and paper work were received in good order. Samples have been received within recommended holding times. Samples chilled when received. Sample containers do not comply to pretreatment/preservation standards (AS,APHA,USEPA) Please direct any turnaround/technical queries to Michael Heery. Any queries relating to sample condition/numbering/breakages should

be directed to Wael Saleh. ANALYTICAL WORK FOR THIS BATCH WILL BE CONDUCTED AT ALS SYDNEY All aqueous samples are stored for two weeks and solid samples for

three months from the date of completion of the batch, unless specific arrangements are made otherwise.

Purchase Order Number: S0703 Chain of Custody Reference Number: 29933 Project Name: E12591/1

You can expect results to be reported as detailed below:

All Environmental Results Jan. 30, 2002

Comments: HNO3 field filtered preserved samples should be supplied for dissolved metal analysis.

A L S - SERVICING YOUR NEEDS BETTER

ASET

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ACN 088 095 112

Our ref : ASET1472/1687/1-17. Your ref :ES31740 NATA Accreditation No: 14484

29 January 2002

Australian Laboratory Services Pty Ltd, 277,Woodpark Road Smithfield, NSW 2164.

Fax No;02-87848500 Attn:Mr Michael Heery

Dear Michael,

This report presents the results of seventeen samples, forwarded by Australian Laboratory Services Pty Ltd, on 29 January 2002, for analysis for asbestos.

- Introduction: Seventeen samples forwarded were examined and analysed for the presence of asbestos.
- Methods: The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy inconjunction with dispersion Staining method. (Safer Environment Method 1.)
- Results: Sample No. 1. ASET1472 / 1687 / 1. ES31740 TP6 (0.25 0.45). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, stones, sand and debris. No asbestos detected.

Sample No. 2. ASET1472 / 1687 / 2. #10 - ES31740 - TP8 (0.10 - 0.30). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, fragments of plaster, stones and debris. No asbestos detected.

Sample No. 3. ASET1472 / 1687 / 3. #11 - ES31740 - TP8 (0.10 - 0.3A). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of plaster, sand and debris. No asbestos detected.

Sample No. 4. ASET1472 / 1687 / 4. #14 - ES31740 - TP10 (0.10 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of plaster, sand and debris. No asbestos defected.

Sample No. 5. ASET1472 / 1687 / 5. #15 - ES31740 - TP10 (0.10 - 0.3A). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of plaster, sand and debris. No asbestos detected.

P.O. BOX 1644 HORNSBY NORTHGATE NSW 1635. 5/14-18 WATER STREET, HORNSBY NSW 2077 PHONE: (02) 9987 2183 FAX: (02) 9987 2151 EMAIL: sset@matra.com.au

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OCCUPATIONAL HEALTH & SAVELY STUDIES + INDOOR AIR QUALITY SURVEYS +HAZARDOUS MATERIAL SURVEYS + ASBESTOS SURVEYS + RADIATION SURVEYS ASBESTOS DETECTION & IDENTIFICATION + REPAIR & CALIBRATION OP SCIENTIFIC EQUIPMENT + SUICA AND GLASS FIRRE MONITORING



Sample No. 6. ASET1472 / 1687 / 6. #16 - ES31740 - TP11 (0.10 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, plaster, sand, stones and debris. No asbestos detected.

Sample No. 7. ASET1472 / 1687 / 7. #17 - ES31740 - TP12 (0.0 - 0.15). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, stones, sand, fragments of plaster and paint flakes, plant matter and debris. No asbestos detected.

Sample No. 8. ASET1472 / 1687 / 8. #19 - ES31740 - TP14 (0.0 - 0.2). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, stones, sand, fragments of plaster, plant matter and debris. No asbestos detected.

Sample No. 9. ASET: 472 / 1687 / 9. #21 - ES31749 - TP15 (0.1 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, sand, plant matter, stones and debris. No asbestos detected.

Sample No. 10. ASET1472 / 1687 / 10. #24-ES31740 - BH3 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, sand, stones, plant matter and debris. No asbestos detected.

Sample No. 11. ASET1472 / 1687 / 11. #27 - ES31740 - BH6 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, stones, sand and debris. No asbestos detected.

Sample No. 12. ASET1472 / 1687 / 12. #28 - ES31740 - BH7 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, stones, sand and debris. No asbestos detected.

Sample No. 13. ASET1472 / 1687 / 13. #29 - ES31740 - BH8 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, sand, stones, plant matter and debris. No asbestos detected.

Sample No. 14. ASET1472 / 1687 / 14. #30 - ES31740 - BH9 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, sand, stones, plant matter and debris. No asbestos detected.



Sample No. 15. ASET(472 / 1687 / 15. #31 - ES31740 - BH10 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, sand, stones and debris. No asbestos detected.

Sample No. 16. ASET(472 / 1687 / 16. #32 - ES31740 - BH11 (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, sand, stones, plant matter and debris. No asbestos detected.

Sample No. 17. ASET1472 / 1687 / 17. #22 - ES31740 - BHI (0.0 - 0.3). Approx dimensions 3.5 cm x 3.5 cm x 3.0 cm The sample consisted of a mixture of soil, stones, sand, plant matter and debris. No asbestos detected.



NATA Accredited Laboratory Number: 144.94

NATA endorsed test report. This document shall not be reproduced, except in full.

Analysed and reported by,

Mahen De Silva , MSc. Grad Dip (Occ Hyg) Occupational Hygienist / Approved Signatory.

ALS Environmental



CERTIFICATE OF ANALYSIS

CONTACT:	MR JOSHUA LASKY	BATCH:	ES31740
CLIENT:	COFFEY GEOSCIENCES PTY LTD	SUB BATCH:	0
ADDRESS:		LABORATORY:	SYDNEY
	P O 80X 125	DATE RECEIVED:	25/01/2002
	NORTH RYDE NSW 2113	DATE COMPLETED:	31/01/2002
		SAMPLE TYPE:	SOIL
ORDER No.:	\$0703	No. of SAMPLES:	32
PROJECT:	E12591/1		

COMMENTS

Samples as received digested by USEPA method 200.2 (mod) prior to the determination of metals. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of Potentially Contaminated Soil (Decomber 1999). This report supersedes any previous proliminary reports of the same batch number.

NOTES

This is the Final Report and supersedes any proliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address 277-289 Woodpark Road SMITHFIELD NSW 2164
 Phone:
 61-2-8784 8555

 Fax:
 61-2-8784 8500

 Email:
 brianw@als.com.au

Signatory

beg Vagel

LABORATORIES

AUSTRALASIA

Brisbano Melbourno Sydnoy Newcastia Auckiand Hang Kang Singapora Kuala Lumpur Bogor

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)

Vancouver Santiago Antofagasta Lima

AMERICAS

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tast(s) reported barelin have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



Page 1 of 17

Batch:

Sub Batch: Date of Issue:

Cilent:

CERTIFICATE OF ANALYSIS



31/01/2002 COFFEY GEOSCIENCES PTY LTD

Cilent Reference: E12591/1

								SAMPLE ID	SAMPLE IDENTIFICATION	NO			
		Laboral	Laboratory I.D.	-	2	rt)	4	\$	6	7	70	¢ħ	10
		Date S	Date Sampled	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002
				TP2	_1 ²⁹¹	TP3_	TP4_	TP4	TPS	TP6		797_	TP8_
	ANALYSIS DESCRIPTION	LINU	LOR	0.1-0.35	0.4-0.65	0.25-0.45	0.1-0.3	0.1-0.3A	0.25-0.55	0.25-0.45	0.0-0.21	0.35-0.55	0.1-0.3
EA-055	Moisture Content (dried @ 103°C)	*	D.1	16.7	4.3	4.3	15.6	6.61	3.2	6.2	12.6	10.4	99
EG-005T	Arsenic - Total	5x/Sm	~	63	¢	v	67	4	N	~	ų	: 40	5
EG-005T	Cadmium • Total	Bayew	v-	Ţ.	¥	Ł	V	7	¥.	v	¥	v	v
EG-ODST	Chromium - Total	5y/5w	¥-	21	42	91	17	16	12	15	12	24	
EG-0051	Copper - Total	thg/kg	4	4	67		43	3	ы	G	6	ġ	ι. G
EG-005T	-	mg/kg	⊷	63	٦	<u>۲</u>	24	2	ž	·-	ι <u>ς</u> τ	ω	-
EG-005T		Буюш	٣	335	2	1	178	194	0;	- - - -	253	100	1.7
EG-0057 .	Zinc Total	Bybu	Ŧ	358	Ø	60	220	308	0,	ത	372	165	
EG-035T	Mercury Total	тока	i 0.1	0.1	<0.1	<0.1	0.4	4.0	¢0,5	<0.1	0.5	0.1	<0.1

ALS Environmental

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)

Sub Batch: 0 CERVIFICATE OF ANALYSIS Date of Issue: 31/01/2002 CERVIFICATE OF ANALYSIS Date of Issue: 31/01/2002 CERVIFICATE OF ANALYSIS Client: COFFEY GEOSCIENCES PTY LTD 11 12 13 14 SAMPLE IDENTIFICATION METHOD ANALYSIS DESCRIPTION UNIT LOR 0.10.31 0.20.03 24/01/2002 <t< th=""><th>Batch:</th><th></th><th>ES31740</th><th></th><th></th><th></th><th>1</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	Batch:		ES31740				1									
of Issue: 31/01/2002 Att COFFEY GEOSCIENCES PTY LTD Att SAMPLE IDENTIFICATION Att Att Att COFFEY GEOSCIENCES PTY LTD Att Att<	Sub Batcl	겉	0				5	-KIIFIC	N H H O	IF ANA	LYSIS					
Att COFFEY GEOSCIENCES PTY LTD 11 12 13 5 15 17 13 14 15 17 13 14 15 17 13 14 15 17 13 14 15 16 17 13 14 13 15 14 13 13 14 13 14 13 14 13 14 13 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 <th< th=""><th>Date of Is</th><th>:ene:</th><th>31/01/2002</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>ر آ</th><th>(1)</th><th></th></th<>	Date of Is	:ene:	31/01/2002											ر آ	(1)	
It Reference: E12591/1 It Reference: E12591/1 SAMPLE IDENTIFICATION SAMPLE IDENTIFICATION 17 18 19 19 Date Sampled 2401/2002	Client:		COFFEY GEOS(CIENCES	מדש אדפ											
Commentation Table 24/01/2002 13 14 15 15 17 13 14 15 15 17 15 17 13 13 13 14 15 17 15 17 13 13 17 14 15 17 15 17 16 17 17 15 17 16 17 13 14	Client Re	ference:	E12591/1													
CD ANALYSIS DESCRIPTION 11 12 13 14 15 15 17 18 13 13 OD ANALYSIS DESCRIPTION UNIT LCR 24/01/2002										SAMPLE ID	ENTIFICATIO	NO				F
Date Sampled 2401/2002 24/01/				Laborati	21. D.	11			14	15	15		18	-13	20	[
NALYSIS DESCRIPTION UNIT LOR TP9_ TP9_ TP1_ TP1_ <td></td> <td></td> <td></td> <td>Date Sai</td> <td>mpled</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td>24/01/2002</td> <td></td>				Date Sai	mpled	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	
OD ANALYSIS DESCRIPTION UNIT LOR 0.1-0.3A 0.2-0.4 1.0-1.2 0.1-0.3 0.1-0.2 0.1-0.2 0.1-0.3 0.1-0.1 0.1 0.1 0.1<						TPS	64T	TP9	7P10	TP10	TP11	TP12	FP13	7P14	TP:4	3
Moisture Content (died @ 103°C) % 0.1 5.4 11.9 12.7 4.6 4.3 5.1 8.6 1.06 9.2 7 Arsenic - Total mg/kg 1 4 5 3 3 5.1 8.6 10.6 9.2 7 Arsenic - Total mg/kg 1	METHOD	ANAL	YSIS DESCRIPTION	UNIT	Б Ц	0.1-0.3A	0.2-0.4	1.0-5.2	0.1-0.3	0.1-0.3A	0.1-0.3	0.0-0.15	0.1-0.3	C.D-0.2	0.3-5.0	
Arsenic -Total mg/kg 1 4 5 3 3 4 3 <th3< th=""> 3 3</th3<>	EA-055	Moisture C	ontent (dried @ 103°C)	*	0.1	5.4	: 11.9	: 12.7	4.6	4.3	4.4 1.1	8,8	10.6	9.2	7.2	I
Cadmium - Total mg/kg 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	EG-005T		- Total	ნაკნლ	Ţ	*	ŝ	67	ŝ	•	4	67	ю	ŋ	ശ	
Chrosnium - Total mg/kg 1 22 20 25 3 5 11 12 7 Cooper - Total mg/kg 1 7 3 5 1 12 7 Cooper - Total mg/kg 1 1 2 1 1 2 10 5 1 1 1 1 1 1 1 1 1 2 10 5 13 1 <	EG-0057	Cadmium	- Total	^ε δχ/θω	÷	7	۲	¥	য	v	۲	ŕ	¥	ŗ	<u>د</u>	
Cooper - Total mg/kg 1 5 8 5 1 1 2 10 6 13 Nicket - Total mg/kg 1 1 4 3 <1 1 4 3 11 13 11 4 3 <1 4 5 15 15 15 15 15 15 15 15 15 15 15 70 57 50 <th< td=""><td>EG-005T</td><td>Chromium</td><td></td><td>By/Bu</td><td>-</td><td>52</td><td>20</td><td>5</td><td>Ø</td><td>10</td><td>18</td><td>Ę</td><td>12</td><td>*</td><td>20</td><td>• •</td></th<>	EG-005T	Chromium		By/Bu	-	52	20	5	Ø	10	18	Ę	12	*	20	• •
Nicket Total mg/kg 1 1 4 3 1 4 3 1 4 3 1 4 3 1 4 3 1 4 3 1 4 5 4 3 1 4 5	EG-OUST	Copper	- Total	ទិងក្រូចិណ	÷	ф.	τù	¢	-	-	57	10	Q	<u>ئ</u>	ŝ	
Lead - Total mg/kg 1 13 11 13 13 14 26 44 2 44 7 50 50	EG-0051	Nickel	- Total	53/Bau	-	+	4	eò	₹	£	¥	e	۲	7	7	• •
Zince Total mg/kg 1 11 10 15 4 3 5 127 16 70 Mercury - Total 0.1 <0.1	EG-005T	Lead	- Totat	աց/հց	Ŧ	6)	2	13	6 3	4	J	\$	r-	\$7	11	<u> </u>
Mercury - Total ng/kg 0,1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.	EG-005T		- Total	03/SCI	-	5	₽	80 17	4	'n	ŝ	137	16	02 .	C1	
	EC-0357	Mercury	- Total	chighter	0.1	ê.	<0.1	40.1	\$0,5	£.0	<0.1	<0.1	<0.1	\$0, 1.0	<0.1	

ALS Environmental

Australian Laboratory Services Pty Ltd (ABN 84 009 935 029)

ES31740	0	31/01/2002	COFFEY GEOSC
Batch:	Sub Batch:	Date of Issue:	Client

CERTIFICATE OF ANALYSIS



COFFEY GEOSCIENCES PTY LTD E12591/1

Client Reference:

									SAMPLE ID	SAMPLE IDENTIFICATION	NO			
·			Laboratory I.D.	ory I.D.	21	22	23	24	25	26	27	23	29	30
			Date Sampled	mpied	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/05/2002	24/01/2002	24/05/2002	24/01/2002
					1915	EH9	BH2	5H3	BH4	BHS	BH6	BH7		6H9
METHOD	ANAL	ANALYSIS DESCRIPTION	UNIT	LOR	0.1-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.0	0.0-0.3
EA-055	Moisture C	Moisture Contert (dried @ 103'C)	8	0.1	18.8	22.1	10.5	5.9	17.5	:1.3	19.2	16.5		7,4
EG-005T	Arsenic	- Total	mg/kg	-	4	٢	ŝ	ю	4	w	ŝ	¥	30	ю
EG-005T	Cadmium	- Total	Dyrom .	+	2	٩	ب	41	₹	¥	ţ,	Ŷ	۷	۴
EG-005T	Chromlum	- Total	by/gm	+•	5	13	ŧ	5 5	13	16	¥L	7	••• ••	1:
EG-005T	Copper	- Total	рурш	,-	8	45	219	4	50	÷.	35	ů.	16	a)
EG-005T	Nickel	- Totai	Бу/Вш	-	52	7	40	4	a,	съ	сл 	r3	ų	64
EGOCST	Lead	• Total	£уувш	•	272	336	435	213	320	327	674	156	227	133
EG-005T	202	- Total	0x/Sw	Ţ	100	296	338	1 12	104	264	2:1	146	152	75
EG-035T	Mercury	- Totzl	6xy5w	0.1	<0.1	0.5	0.2	0.2	0.1	G.2	A G	0.2	0.2	4 0.1

ALS Environmental
31	Laboratory LD.	
	it Reference: E12591/1	Client Reference:
	COFFEY GEOSCIENCES PTY LTD	Client:
	31/01/2002	Date of Issue:
	0	Sub Batch:
	ES31740	Batch:
		•

CERTIFICATE OF ANALYSIS

						SAMPLE IDENTIFICATION	
		Laboratory I.D.	ory I.D.	31	31 32		
		Date Sampled	mpled	24/01/2002	24/01/2002		
				RH:0	0111		
METHOD	ANALYSIS DESCRIPTION	TINU	LOR	0.0-0.3	0.0-0.3		
EA+055	Molsture Content (dried @ 103'C)	ج	0.1	S,4	5.2		-
EG-005T	Arsenic - Total	DYbu	-	e)	Ş		
EG-005T	Cadmium - Total	бубш	-	Ŷ	⊽		
EG-005T	Chromium - Total	, Bygm	۴	¢a	18		•
EG-0057	Copper - Total	Bybu	£	¢	£		
EG-COST	Nickel - Total	вующ	-	м	64		
EG-005T	Lead + Total	, gylgm	-	<u>م</u>	112		
EG-005T	Zino - Total	Dalled m	ſ	4	52		
EG-035T	Mercury - Total	mg/kg	0.1	<0.1	<0.1		



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Batch: Sub Batch: Date of Issue: Client: Client Reference:	h: sue: ference:	ES31740 0 31/01/2002 COFFEY GEOSCIENCES PTY LTD E12591/1	CIENCES	ריזע גידט		ថ	JALITY	CONT	ROL R	QUALITY CONTROL REPORT	1			M A
									SAMPLE ID	SAMPLE IDENTIFICATION	NO			
			Laboratory 1.D.	Dry 1.D.	-	-	11	11	21	21	31	31	200	201
			Date Sampled	mpled	124/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	·	24/01/2302 24/01/2002	24/01/2002	25/01/2002	25/01/2002
					TP2_0.1-	TP2_0.1-	TP8_0.1-	TP3_0.1-	TP15_0,1-	TP15_0.1-	BH10_0.0-	BH10_0.0-	METHOD	LCS1
METHOD	ANALYSIS D	ANALYSIS DESCRIPTION	LINU	Lол	0.35_MS	0.35_CHK	0.3A MS	0.3A_CHK	0.3_MS	0.3 CHK	0.3 MS	0.3 CHK	BLANK1	
									CHECKS AND SPIKES	SPIKES				
EA-055	Moisture Content (ched @ 103'C)	tried @ 103°C)	*	0.1		16.7	1	5.4		18.8		5.4		
EG-005T	Arsenic - Total		mg/kg		100%	¢Ĵ.	53.0%	us	110%	ю	*01%		2	94.0%
EG-005T	Cadmium - Total		mgrkg	Ţ	%0`66	٧	95.0%	\$	101%	ř	102%	7	<1	36.0%
EG-005T	£	<u> </u>	thg/kg	-	87.0%	ដ	89.0%	13	101%	4	102%	13	۲	52.0%
EG-0051	L		ლეჩე	-	97,0%	38	95.0%	IJ	107%	<u></u>	105%	-	¥	97.0%
EG-005T	_		mgrikg	••	33.0%	¢	88.0%	÷	105%	ŝ	100%	-	¥	93.0%
EG-005T	Lead - Total		ti ku ti ku	••	1	316	97.0%	ц Ц	1	256	: 103%	72	V	98.0%
EG-005T	Zine Total		Byga	Ţ	1	275	98.3%	- <u></u>	\$2.0%	66	105%	8		57.0%
EG-035T	Mercury - Total		mg/kg	0.1	92.0%	0.1	94.0%	<0.1	64.0%	¢0.1	93.0%	40.1	<0.1	91.0%
													•	

ALS Environmental

Australian Laboratory Services Pty Ltd (ABN 84 009 935 029)

METHOD BLANK2	LOR	UNIT	ANALYSIS DESCRIPTION	ANAL	METHOD
 25/01/2002	ampled	Date Sampled			
205	Laboratory I.D.	Laborato			
			E12591/1	erence:	Client Reference:
	ΡΤΥ LTD	CIENCES	COFFEY GEOSCIENCES PTY LTD		Client:
			31/01/2002	:ene:	Date of Issue:
			o	۲ ۲	Sub Batch:
			E\$31740		Batch:

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Client Reference:	ference:	E12591/1						
							SAMPLE IDENTIFICATION	
			Laboratory I.D.	ory i.D.	205	203		:
			Date Sampled	mpled	25/01/2002	25/01/2002		
					METHOD	LCS2		
METHOD	ANALYSI	ANALYSIS DESCRIPTION	UNIT	LOR	BLANK2			
							CHECKS AND SPIKES	-
EA-055	Maisture Conte	Maisture Content (dried @ 103°C)	*	0.1	****			
EG-0057	Arsenic - To	- Total	толо	-	۷	36.0%	-	
EG-005T	Cadmium -	- Total	тgrkg	-	۲	54.0%		
EG-005T	Chromium -	- Total	Bybu	-	v	91.0%		
EG-00ST	Copper - T	- Total	 Dy/Bu	-	r	97.0%		
EG-0057	Nickei - Total	tal	mg/kg	-	v	58.0%		
EG-0051	Lead - Total	tai tai tai tai tai tai tai tai tai tai	54/5w	۴	٢	%0'86		
EG-0051	Zine Total	14	5%Gm	Ŧ	ŗ	95.0%		
EG-035T	Mercury -T	- Total	i by/bu	0,1	<0.1	93,0%		

ALS Environmental

Australian Leboratory Services Phy Ltd (ABN 84 009 936 029)

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CERTIFICATE OF ANALYSIS

CONTACT: MR JOSHUA LASKY CLIENT: COFFEY GEOSCIENCES PTY LTD ADDRESS:

P O BOX 125 NORTH RYDE NSW 2113

ORDER No.: S0703 PROJECT: E12591/1

BATCH: SUB BATCH: 1 LABORATORY: DATE RECEIVED: DATE COMPLETED: SAMPLE TYPE: No. of SAMPLES: 1

ES31740 SYDNEY 25/01/2002 31/01/2002 WATER

COMMENTS

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address 277-289 Woodpark Road SMITHFIELD NSW 2164

Phone: 61-2-8784 8555 61-2-8784 8500 Fax: brianw@als.com.au Email:

Signatory

freg Vogel

LABORATORIES

AUSTRALASIA

Brisbano Melbourne Sydney Newcastle Auckland

Hong Kong Singapore Kuala Lumpur Bogor

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)

Vancouver Santiago Antolagasta i ima

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Batch:		ES31740					
Sub Eatch:	Ë	~				CERTIFICATE OF ANALYSIS	
Date of Issue:	sue:	31/01/2002					
Client:		COFFEY GEOSCIENCES PTY LTD	SCIENCES	PTYLTD			
Client Reference:	ference;	E12591/1					
						SAMPLE IDENTIFICATION	
			Laboratory I.D.	ory 1.D.	33		:
			Date Sampled	umpled	24/01/2002		
					WB-25-1-02		
METHOD	ANALY	ANALYSIS DESCRIPTION	LIND	Ъ			
EG-020F	Arsenic -	< Filtered	תם,ר ר		41		
EG-020F	Cadmium	- Filtered	ug/L	-	Ŷ		
EG-020F	Chromium	- Filtered	ug'L	-	٧		
EG-0205	Copper .	- Filtered	ר,טי	F	ĩ		
EG-020F	Nickei	 Fittered 	מפיור	-	v		
EG-020F	Lead	- Filtered	nĝ,	-	v		
EG-020F	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- Fittered	J'QU	÷	2		
EG-035F	Mercury	- Filterec	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.1	<0.1		

ALS Environmental

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)



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Batch:	ES31740
Sub Batch:	
Date of Issue:	31/01/2002
Client:	COFFEY GEOSCIEN(

QUALITY CONTROL REPORT



CES PTY LTD E12591/1

SAMPLE IDENTIFICATION CHECKS AND SPIKES 25/01/2002 106% 102% 99.0% 100% 104% 98.0% 33 ŝŅ 25/01/2002 89.0% 89.0% 89.0% 89.0% 91.0% 91.0% ട്ട് 201 25/01/2002 METHOD BLANK 8 V V ട്ട് Laboratory I.D. Date Sampled ANALYSIS DESCRIPTION - Filtered - Fittered Cadmium **Client Reference:** Arsenic METHOD

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5

- Filtered

- Filtered - Fittered

Lead Zinc Mercury

- Filtered

EG-020F EG-020F EG-0205 EG-0355

V V

- Filbred

Chromium

EG-020F

EG-020F

EG-020F

EG-020F

- Filtered

Copper Nickel **ALS Environmental**

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)

ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT: MR JOSHUA LASKY CLIENT: COFFEY GEOSCIENCES PTY LTD ADDRESS: P O BÓX 125

NORTH RYDE NSW 2113 ORDER No.: \$0703

E12591/1

PROJECT:

BATCH: SUB BATCH: LABORATORY: DATE RECEIVED: DATE COMPLETED: SAMPLE TYPE: No. of SAMPLES:

ES31740 2 SYDNEY 25/01/2002 31/01/2002 SOIL 6

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of <u>Potentially Contaminated Soll (December 1999).</u>

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address 277-289 Woodpark Road SMITHFIELD NSW 2164 Phone: 61-2-8784 8555

Fax: 61-2-8784 8500

Email: brianw@als.com.au

Signatory

LABORATORIES

AUSTRALASIA

Brisbane Molbourne Sydney Nowcastle Auckland Hong Kong Singapore Kuala Lumpur Bogor Vancouver Santiago Antofagasta Lima

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Page 11 of 17





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31/01/2002

Date of Issue: Sub Batch; Batch:

CERTIFICATE OF ANALYSIS



Client:	COFFEY GEOSCIENCES PTY LTD	CIENCES	קידי							
Client Reference:	ierence: E12591/f									
		-						SAMPLE ID	SAMPLE IDENTIFICATION	
		Labora	Laboratory I.D.	+	4	\$	7	14	33	
		Date S	Date Sampled	24/01/20/02	24/01/2002	24/01/2002	24/01/2632	24/01/2002	24(01/2002	
		·		7P2 1	TP4_	TP4	TP6	7P10	†P13.	
METHOD	ANALYSIS DESCRIPTION	LINU UNIT	LOR	0.1-0.35	0.1-0.3	0.1-0.3A	0.25-0.45	0.1-0.3	0.1-0.3	
EA-055	Moisture Content (dried @ 103°C)	Å	0.1 L	15.7	18.6	18.9	62	4.6	10.6	
EP-071-SS	TOTAL PETROLEUM HYDROCARBONS									
EP-071-SS	CS - C9 Fraction	pylygm	~	ų	4	ů	Ŷ	Ŷ	 ⊽	
EP-071-SS	C10 - C14 Fraction	mg/kg	20	\$	\$\$ 0	A50	8	Ŗ	<50	
EP-071-SS	C15 - C28 Fraction	പ്പുള്നു	ĝ	<100	<100 <	<100	<100	2100 A 100	v;00	
EP-071-SS	C29 - C36 Fraction	тgikg	5 2	<100	<100 100	4100	<103	4103	4100 A	
EP-080-SS	BTEX									
EP-080-SS	Benzene	£%lgm	0.2	<0.2	40'S	<0.2	<0.2	<0.2	<0.2	
EP-080-SS	Toluene	Baligm	0.2	¢0.2	<0.2	£0.2	<0.2	6.2 Å	<0.2	
EP-080-SS	Chlorobenzene	Bygm	0.2	40.2	<0.2	1.01.1	40.2	50×	<0.2	
EP-080-SS	Ettytbenzene	щg/kg	0.2	40,2 40,2	4.0 2	<0.2	40.2	<0.2	≤0.2	
EP-030-55	meta- & para-Xylane	mg/kg	0.2	<0.2	<0'7	<0.2	<0.2	<0.2	<0,2	
EP-080-SS	ortho-Xylene	mg/kg	0.2	<0.2	40.2	40.2	<0.2	40.2 20.2	<0.2	
EP-0805-55	VOLATILE TPH/BTEX COMPOUND SURRDGATES	DGATES								
EP-090S-SS	1.2-Dichloroethane-D4	*	~	63	87	Ş,	100	102	103	
EP-080S-SS	Toluene-D8	*	+	32	53 53	55	103	101	102	
EP-080S-SS	A-Bromofluorobenzene	*	÷	36	3	91 	107	105	106	

ALS Environmental

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)

Batch:	ES31740
Sub Batch:	2
Date of Issue:	31/01/20(

2 31/01/2002

QUALITY CONTROL REPORT



	COFFEY GEOSCIENCES PTY LTD	SCIENCES	קין אדק						
Client Ré	Client Reference: E12591/1								
								SAMPLE IDE	SAMPLE IDENTIFICATION
		Labora	Laboratory I.D.	100	101	102	103	104	
		Date Sampled	empled	25/01/2002	25/01/2002	25/01/2002	25/01/2002	25/01/2002	
				METHOD	NTPHT3083	NTPHT3083	NTPHT3083	NTPHT3083	
METHOD	ANALYSIS DESCRIPTION	UNIT .	LOR	BLANK1	SCS	DCS	SM	MSD	
								CHECKS AND SPIKES	SPIKES
EA-055	Maisture Content (ched @ 103°C)	8	0.1		1	1		•	
£P-071.55	TOTAL PETROLEUM HYDROCARBONS								
EP-071-SS	C6 - C3 Fraction	Ba),Bcu	24	ů	102%	102%	99.0%	89.0%	
EP-071-SS	C10 - C14 Fraction	54/2Ci	ទំ	4 50	95.0%	\$5.0%	. 92.0%	88.0%	-
EP-071-55	C15 - C28 Fraction	tag/kg	Ş	<100	100%	100%	\$9°0%	33.0%	
EP-071-55	C29 - C36 Fraction	ang/kg	100	<100	102%	100%	1		
EP-080-55	BTEX								· · ·
EP-080-SS	Benzene	thg/kg	0.2	<0.2	%0°26	101%	102%	108%	
EP-080-SS	Toluene	mg/kg	0.2	402	96.0%	101%	36.0%	930,68	
EP-080-SS	Chlarobenzene	gyldm	0.2	40¥	38.0%	:02%	97.0%	101%	
EP-080-55	Ethylbenzene	бу _л бш	0.2	<02	101%	102%	1	ł	
EP-080-SS	meta- & para-Xylene	₿ % ĝ	20	ч 02	100%	100%	ļ	ł	
EP-080-SS	ortho-Xytene	mg/kg	0.2	<0.2	. 100%	101%	1]	
EP-080S-SS	VOLATILE TPH/BTEX COMPOUND SURRDGATES	ROGATES							
EP-050S-SS	1.2-Dichloroethane-D4	*	-	110	103	105	5 87	5	
EP-080S-SS	Toluene-D8	*	-	106	110	 17	8	101	
EP-050S-SS	4-Bromofluorobenzene	%	۴	107	109	103	69	101	

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Australian Leboratory Services Phy Ltd (ABN 84 009 936 029)

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CERTIFICATE OF ANALYSIS

CONTACT: MR JOSHUA LASKY CLIENT: COFFEY GEOSCIENCES PTY LTD ADDRESS: P O BOX 125

NORTH RYDE NSW 2113

ORDER No.: \$0703 PROJECT: E12591/1

ES31740 BATCH: 3 SUB BATCH: LABORATORY: DATE RECEIVED: DATE COMPLETED: SAMPLE TYPE: SOIL No. of SAMPLES: 11

SYDNEY 25/01/2002 31/01/2002

COMMENTS

Samples analysed on an as received basis. Results reported on a dry

weight basis. All analysis and Laboratory QC conducted in accordance

with Schedule B(3) NEPM Guideline on Laboratory Analysis of

Polontially Contaminated Soil (December 1999).

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address 277-289 Woodpark Road SMITHFIELD NSW 2164

Phone: 61-2-8784 8555 61-2-8784 8500 Fax: Email: brianw@als.com.au

Signatory

LABORATORIES

AUSTRALASIA

Brisbane Melboume Sydney Newcestie Aucklend Hong Kong Singapore Kuala Lumpur Bogor

Australian Laboratory Services Pty Ltd (ABN 84 009 936 029)

AMERICAS Vancouver Santiago Antolagasta

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Page 14 of 17

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COFFEY GEOSCIENCES PTY LTD E12591/1 31/01/2002 ന

Sub Batch: Date of Issue:

Batch:

Client:

CERTIFICATE OF ANALYSIS



									E < CILL	1			
		Laborat	Laboratory I.D.	-	3	4	5			BND	4	9	ψ
-		Date Sampled	ampied	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002	24/01/2002
				T72	5c1	TP4	TP4	TPS	TP5	14,L	19:0	1011	TP13
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	0.1-0.35	0.25-0.45	0.1-0.3	0.1-0.3A	0.25-0.55	0.25-0.45	0.0.0.21	0.1-0.3	1-0-1-0	0.1-0.3
EA-055	Molsture Content (dried @ 103'C)	*	0.1	16.7	4.3	18.6	18.9	3.2	5.2	12.6	4.6		12.6
EP-076A-SS	POLYNUCLEAR AROMATIC HYDROCARBONS	SNOAS											
EP-076A-SS	Naphthalene	Bygm	0.5	<0.5	40.5	<0.5	<0.5	<0.5	40.S	<0.5	۸¢.5 ۲	<0.5	<0.5
EP-076A-SS	Acenaphthylene	вујбш	0.5	<0.5	40.5	<0.5 <0.5	<0.5 5.05	<0.5	¢0.5	<0.5	۲3 ۲3 ۲	<0.5	40.5 A
EP-076A-SS	j Acenaphthene	მავნო	0,5	40,5	<0.5	<0.5	<0.5	<0.5	¢0,5	<0.5	<0.5	<0.5	<0.5
EP-076A-SS	Fluorens	BX/Bm	0.5	40.5	<0.5	<0.5	<0.5	5,0¥	<c.5< td=""><td><0'5</td><td>2°.5</td><td>40.5 A</td><td>40.5 20.5</td></c.5<>	<0'5	2°.5	40.5 A	40.5 20.5
EP-076A-SS	Phenanthrena	ВууВчш	0.5	Å0.5	<û.5	<0.5	<0.5	4 [.] 07	<0.5	C.7	<0.5	<0.5	47.02 V
3P-076A-SS	Authracene	ວັນເຮັບ	0.5	<0.5	40.5	<0.5	<0.5 <	<0.5	<0.5	<0.5 <	¢0.5	<0.5	<0.5
EP-076A-SS	Flugranthene	mg/kg	0.5	40.5 A	<0.5	<0.5	<0.5	<0.5	<0.5	ن	<0.5 5.5	<0.5	<0.5
EP-076A-SS	Pyrene	ლე/ცე	0.5	40.5 A0.5	<0.5 <	40.5 A	<0.5	<0.5	<0.5	20.5	s S V	¢0,5 40,5	<0'2
EP-076A-SS	Benz(a)anthracene	mg/kg	0.5	40.5	<0.5	40.5	<0,5	₹0.5	<0.5	<0.5	¢n Ci V	40,5 ≺0,5	€.5
EP-076A-SS	Chrysene	mg/kg	0.5	40.5 4	8.0 5	5.0×	<0.5	<1.5	<0.5	40.8	<0.5	40.5	< 0.5
EP-076A-SS	Benzo(b)flucranthene	mg/kg	0.5	+0.5	8.0¥	ν. ΟΥ	<0.5	<0,5	<0.5	<0.5	<0.5 <	<0'S	40.0×
EP-076A-SS	Benzo(K)fluoranthene	mg/kg	0.5	<0.5	<0.5 5,0,5	40,5 4	<0.5	<0.5	<0.5 <	\$0.5 V	en ci V	<0.5	<0.5
EP-076A-SS	Berzo(a)pyrene	mg/kg	0.5	<0.5	€0.5	<0.5	<0.5	£0.5	40.5 4	40.5	÷0.5	<.0.5	<0.5
EP-076A-SS	Intero(1.2.3.cd)pyrene	mg/kg	Ð.5	5°.5	£.0×	<0.5	<0.5	Å0.5		<0.5 50.5	¢0.5	<0.5	<0.5
EP-076A-SS	Diberz(a.h)anthracene	່ານອູ່ແດ	0.5	5.05	AC.5	5°C7	<0.5	<0.5	40.45 A.0.5	<0.5 2,05	<0.5 C.5	\$0,5	<0.5
EP-076A-SS EP-076S-SS	Benzo(g.h.i)perytene SURROGATE COMPOUNDS	Бую́ш	0.5		<0.5	2.C.A	6.0×	<0.5	<0.5	6.0×	<0.5	, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<0.5
EP-0785-SS	2-Fluorobiphenyl	*	-	8	8	76	73	79	ŝ	ŝ	35	26	88
SS-5940-dB	Anthracene-d10	ぷ	•	ş	112	5	89	5	102	71	109	55	101
EP-076S-SS	p-Terphenyl-d14	8	~	6	. 83	99	75	100	105	. 72	102	82	109

ALS Environmental

31/01/2002 COFFEY GEOSCIENCES PTY LTD ES31740 ო Sub Batch: Date of Issue: Client: Batch:



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Client Reference:	ference: E12591/1		-				
					6	SAMPLE IDENTIFICATION	
		Laboratory I.D.	ory I.D.	21			
		Date Sampled	tmpled	24/01/2002			
		1		7P15			
METHOD	ANALYSIS DESCRIPTION	UNIT	LOR	0.1-0.3			
EA-055	Moisture Content (dried @ 103°C)	: %	6.1	13.8			
EP-076A-SS	POLYNUCLEAR AROMATIC HYDROCARBONS	RONS					
EP-076A-SS	Naphthalene	ang/kg	0.5	<0.5	<u> </u>		
EP-076A-SS	Acenaphthylene	mg/kg	0.5	<0.5			
EP-076A-SS	Acenaphthene	pylen	0.5	<0.5			
EP-076A-SS	Fluorense	mg/kg	<u>5.0</u>	<0.5			
EP-076A-SS	Phenanthrane	mg/kg	0.5	<0.5			
EP-076A-SS	Anthracene	mg/kg	0.5	\$0.5 20.5			
EP-076A-SS	i Fluoranthene	ng/kg	0.5	<0.5			
EP-076A-5S	Pyrens	5 ByBu	0.5	40.S			
EP-076A-SS	Benz(a)aothracene	თზჯმ	0.5	40.5 A			
EP-076A-SS	Chrysene	നുശ്	0.5	<0.5			
EP-076A-SS	Benzo(b)fluoranthene	നുൾയ	0.5	<0,5			
EP-076A-SS	Benzo(x)fluoranthene	mg/kg	0.5	<0.5			
EP-076A-SS	Berzo(a)pyrene	mg/kg	0.5	40.5			
EP-076A-SS	Indeno(1,2,3,cd)pyrene	mgrkg	0.5	<0.5			
EP-076A-SS	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5			
EP-076A-SS	Benzo(g.h.i)perylene	00 kg	0,5	<0.5			
EP-076S-SS	SURROGATE COMPOUNDS						
EP-076S-SS	2-Fluorobiptienyt	*	÷	6) 6)			
EP-076S-SS	Anthracene-d10	*	۴	104			
EP-076S-SS	p-Terphenyl-d14	*	-	105			

ALS Environmental

ES31740	ო	31/01/2002



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Sub Batch: Date of Issue: Client: Client Reference:	h: 231740 h: 3 ssue: 31/01/2002 coffey geosciences PTY LTD ference: E12591/1	SCIENCES	דיץ רדס		ğ	JALITY	QUALITY CONTROL REPORT	ROL R	EPOR	Ē		
								SAMPLE IC	SAMPLE IDENTIFICATION	NOI		ŀ
		Laboratory I.D.	άη Ι.D.			. -	6	£0;	101	102		
		Date Sampled	ampled	24/01/2002	24/01/2002	24/01/2002	24/01/2002	25/01/2002	26/01/2002	25/01/2002		
			6	TP2_0.1-	TP2_0.1-	TP2_0.1-	1	METHOD	NGP076S445	NEPO76S445NEPO75SA45		
			S S	2:1 00'0	1,30 1031	10.00 -	NAS CHA	CHECKS AND SPIKES	SPIKES	DCS	-	1
EA-055 EP-076A-SS	Moisture Content (dried @ 103'C)	RBONS	0.1	1	1	.6.7	4.3	,	1			
EP-076A-SS	Naphthalena	mg/kg	0.5	į	1	<0.5	40.5	<0.5	\$5.53	36.7%	_	
EP-076A-SS	Acenaphthylene	mg/kg	0.5	1	į	4). Ο Υ	<0.5	¢0.5	88.5%	87.0%		
EP-076A-SS	; Acsnaphthane	mg'kg	0.5	103%	38.9%	£.0.∧ A	<0.5	6.5	95,3%	92.5%		
EP-076A-SS	. Fluarens	; mg/kg	0.5	1	I	<0'S	<0,5	<0.5	91.1%	38.7%		
EP-076A-SS	Phenanthrene	mg/kg	0.5	1	i	\$0.5 2.0	₹0.5	<0.5	92.0%	85.9%		
EP-075A-SS	Arthracene	mg/kg	0.5	ļ	ł	<0.5 5	<0,5	<0.5	92.5%	37.0%		
EP-076A-SS	Fluoranthene	тghg	0.5	Į	Į	¢0.5	9.0×	<0.5	90.09%	33,4 %		
EP-076A-SS	Pyrene	рудш	0.5	50.2%	%2'62	δ.0Y	40.5 A0.5	<0.5	95.8%	93.7%		
EP-076A-SS	Benz(a)anthracene	₿¥/6w	0.5	1	1	40.5	Ψ.O.Y	<0.5	. 89.5%	: 85,1%		
EP-076A-SS	Chrysene	Бу/Вш	0.5	1	•	¢0.5	<0.5	<0.5	30.4%	91.0%		
EP-076A-\$\$	Benzo(b)fluoranthene	₿ą/6w	0.5	ł	1	¢0.5	970¥	<0.5	92.6%	\$3.8%		
EP-076A-SS	Benzo(k)fluoranthene	₿ჯ/6w	0.5	1	1		۲0.5 ۲	<0.5	94.0%	94,7%		
EP-076A-SS	Benzo(a)pyrene	5w6w	0.5	1]	40,5	4) CV	<0.5	91.5%	90.3%		
EP-076A-SS	Indeno(1.2.3.cd)pyrene	mg/kg	0.5	1	1		€ . 0.5	<0.5	87.9%	86.8%		
EP-076A-SS	Diberrz(a.h)anthracene	6y/Scu	0.5	1	1	<0.5	<0.5	40.5 4	57.5%	86.5%		
EP-076A-SS EP-076S-SS	Benzo(g.h.i)perylene SURROGATE COMPOUNDS	0%) 0	0.5	1	1	<0.5	\$.0×	÷0.5	88.9%	87.4%		
EP-076S-SS	2-Fluorobípheny	%	÷	105	113	55 5	3S	91	e G	 83		
EP-076S-SS	Anthracene-d10	%	* -	82	10.0	011	105	1:7	<u>9</u> 2	8		
EP-076S-SS	p-Terphenyl-d14	%	-	8	\$7	110	96	127	110	107		

ALS Environmental

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ALS Environmental



ORGANICS QUALITY CONTROL REPORT

BATCH NO: ES31740

DATE BATCH RECEIVED: 25/01/02

CLIENT: Coffey Geosciences Pty Ltd

DATE BATCH COMPLETED: 31/01/02

PROJECT: E12591/1

Method	Test	Matrix	Method i	Reference	QC Lot Number	Date	Date
Code			Extraction	Analysis		Samples Extracted	Samples Analysed
EP-071	TPH(SV)	Soil	Tumbler	USEPA 8015A	NTPHT3083	29/01/02	30/01/02
EP-071/80	TPH(V)/BTEX	Soil	USEPA 5030A	USEPA 8260A	NVOCS3083	29/01/02	30/01/02
EP-076	PAH (USEPA	Soil	Tumbler	USEPA 8270C	NEP076S-445	29/01/02	

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Where applicable, internal standards are added to sample extracts prior to instrumental analysis. Absolute peak areas and retention times fall within the criteria specified in the individual methods. Continuing Calibration (CC) standards are run at the frequency of 1 in every 20 samples.

Abbreviations: SV = semivolatile, V = volatilo

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: In-house methods

BATCH QUALITY CONTROL & GONTROL SPIKE/DUPLICATE

ALS_CP-071 : Total Petroletim Hydrocarbons by Fractions

Vol QC Lot : NVOCS3083 Semivol QC Lot : NTPHT3083 MATRIX : Soit

	BATCH	Blank	Spike		Spike (Results		Co	ntrol Lir	nits
COMPOUND	ADJ.	Conc.	Conc,	SCS	DCS	Av.	CI491	Reco	overy	RPD
	(MDL)			Conc.	Conc.	Rec.			X.	
1	mg/kg	mg/kg	mg/kg	ng/kg	mg/kg	%	%	t.ow	High	%
C6-C9	2.0	<lor< td=""><td>20</td><td>20,4</td><td>20.4</td><td>102</td><td>0</td><td>90</td><td>108</td><td>20</td></lor<>	20	20,4	20.4	102	0	90	108	20
C10-C14	25	<lor< td=""><td>200</td><td>190</td><td>190</td><td>95</td><td>0</td><td>79</td><td>117</td><td>20</td></lor<>	200	190	190	95	0	79	117	20
C15-C28	50	વાગય	209	200	200	100	0	83	115	20
C29-C36	50	<lor .<="" td=""><td>200</td><td>204</td><td>200</td><td>101</td><td>2</td><td>82</td><td>130</td><td>20</td></lor>	200	204	200	101	2	82	130	20

COMMENTS:

1) The control limits are based on ALS taboratory statistical data (Method QWI-ORG/07).

2) * : Recovery or RPD falls outside the recommended control limit.

3) MDL = Method Detection Limit

4) LOR = Level Of Reporting



ALS EP-080 ; BTEX ANALYSIS

QC Lot No. : NVOCS3083

MATRIX : Soil

	BATCH	Blank	Spike		Spike I	Results		Co	ntrol Li	nils
COMPOUND	ADJ,	Conc.	Conc.	SCS	DCS	Av.	RPD	Rec	overy	RPD
	(MDL)			Conc.	Conc.	Rec.			X6	
	mg/kg	nıg/kg	mg/kg	mg/kg	mg/kg	%	%	Low	High	%
Benzene	0.1	<lor< td=""><td>1.0</td><td>0.97</td><td>1.01</td><td>ସହ</td><td>4</td><td>83</td><td>115</td><td>20</td></lor<>	1.0	0.97	1.01	ସହ	4	83	115	20
Toluene	0.1	<lor< td=""><td>. 1.0</td><td>0.96</td><td>1.01</td><td>98</td><td>5</td><td>_ 85</td><td>113</td><td>20</td></lor<>	. 1.0	0.96	1.01	98	5	_ 85	113	20
Chlorobonzene	0.1	<lor< td=""><td>1.0</td><td>0.98</td><td>1.02</td><td>100</td><td>3</td><td>. 89</td><td>112</td><td>20</td></lor<>	1.0	0.98	1.02	100	3	. 89	112	20
Ethylbenzene	0.1	<1.0R	1.0	1,01	1.02	101	1	86	114	20
m- & p-Xylene	0.1	<lor< td=""><td>1.0</td><td>1.00</td><td>1.00</td><td>100</td><td>0</td><td>80</td><td>118</td><td>20</td></lor<>	1.0	1.00	1.00	100	0	80	118	20
o-Xylene	0.1	<lor td="" <=""><td>1.0</td><td>1.00</td><td>1,01</td><td>100</td><td>2</td><td>85</td><td>115</td><td>20</td></lor>	1.0	1.00	1,01	100	2	85	115	20

COMMENTS :

1) The control limits are based on ALS laboratory statistical data (Method QWI-ORG/07).

2) * : Recovery or RPD falls outside the recommended control limit.

3) MDL = Method Detection Limit

4) LOR = Level Of Reporting

BATCH QUALITY CONTROL MATRIX SPIKE/DUPLICATE

ALS EP-071 : Total Petroloum Hydrocarbons by Fractions

Vol QC Lot :	NVOCS3083	SPIKED SAMPLE ES31674-7
Semivol QC Lof :	NTPHT3083	MATRIX : SOIL

	Sample	Spike	Spike Results				Control
COMPOUND	Results	Level	MS	MSD	Av.	RPD	Limits
			Cone	Conc	Rec.		
	ng/kg	mg/kg	mg/kg	mg/kg	. %	%	RPD
C6-C9	<lor< td=""><td>10</td><td>8.9</td><td>8.9</td><td>89</td><td>0</td><td>20</td></lor<>	10	8.9	8.9	89	0	20
C10-C14	<lor< td=""><td>430</td><td>396</td><td>380</td><td>90</td><td>4</td><td>20</td></lor<>	430	396	380	90	4	20
C15-C28	<lor< td=""><td>1570</td><td>1510</td><td>1384</td><td>92</td><td>9</td><td>20</td></lor<>	1570	1510	1384	92	9	20
C29-C36	<lor< td=""><td>N/A</td><td></td><td></td><td>+-</td><td></td><td></td></lor<>	N/A			+-		

COMMENTS :

1) LOR: level of reporting

2) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/06)
3) * : Recovery or RPD fails outside of the recommended control limits.

ALS EP-080 : BTEX ANALYSIS

QC Lot No. : NVOCS3083

53083

SPIKED SAMPLE (ES31674-7 MATRIX : SOIL

	Sample	Spike		Spike Results				
COMPOUND	Results	Level	MS	MSD	۸v.	RPD	Limits	
[L		Conc	Conc	Rec,			
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	RPD	
Benzene	<i.or< td=""><td>2.5</td><td>2.6</td><td>2.7</td><td>105</td><td>5</td><td>20</td></i.or<>	2.5	2.6	2.7	105	5	20	
Toluene	-LOR	2.5	2.1	2.2	87	3	20	
Chlorobenzene	<lor< td=""><td>2,5</td><td>2.4</td><td>2.5</td><td>99</td><td>4</td><td>20</td></lor<>	2,5	2.4	2.5	99	4	20	

COMMENTS :

1) LOR: level of reporting

2) The control limits are based on ALS laboratory statistical data, (Method ClWI-ORG/06)

3) 1: Recovery or RPD falls outside of the recommended control limits,

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

SEMIVOLATEL(S QC LOT NO.) VOLATELES QC LOT No.) NTPHT3083 NVOCS3083

ANALYST: ALICE TAT MATRIX : Soil

	QC DUPLICATE RESULTS					
COMPOUND	ES31674	ES31674	RPD			
	7	7DUP				
	rrrg/kg	mg/kg	%			
C6-C9	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>				
C10-C14	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>				
C15-C28	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>				
C29-C36	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>				

ALS EP-080 : BTEX ANALYSIS

GC Lot No. : MATRIX

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NVOCS3083 Soil k;

Analyst :

H.CAVANAUGH

OC DUPLICATE RESULTS								
COMPOUND	ES31674	ES31674	RPD					
	7	7DUP						
	mg/kg	mg/kg	%					
Bonzene	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>						
Toluono	<lor< td=""><td><lor< td=""><td>**</td></lor<></td></lor<>	<lor< td=""><td>**</td></lor<>	**					
Chlorobenzena	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>						
Ethylbenzene	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>						
m-&p-Xylene	<lor< td=""><td><lor< td=""><td>••</td></lor<></td></lor<>	<lor< td=""><td>••</td></lor<>	••					
o-Xylene	≪LOR	<lor< td=""><td>LF</td></lor<>	LF					

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

SEMIVOLATILES QC LOT NO .:	NTPHT3083	ANALYST: ALICE TAT
VOLATILES QC LOT No.:	NVOCS3083	MATRIX : Soil

	QC DUPLICATE RESULTS				
COMPOUND	ES31674	ES31674	RPD		
	8	8DUP			
	nig/kg	mg/kg	%		
C6-C9	<lor .<="" td=""><td><lor< td=""><td></td></lor<></td></lor>	<lor< td=""><td></td></lor<>			
C10-C14	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>			
C15-C28	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>			
C29-C36		<lor< td=""><td></td></lor<>			

BATCH QUALITY CONTROL -- DUPLICATE

ALS EP-080 ; BTEX ANALYSIS

MATRIX Soil	QC Lot No MATRIX	NVOCS3083 Soif	Analyst :	H.CAVANAUGH
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QC DUPLICATE RESULTS							
COMPOUND	ES31674	ES31674	RPD				
	. 8	8DUP					
	mg/kg	mg/kg	%				
Benzene	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>					
Toluene	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>					
Chlerobenzene	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>					
Ethylbenzene	<lor< td=""><td><lor< td=""><td>_</td></lor<></td></lor<>	<lor< td=""><td>_</td></lor<>	_				
tn-& p-Xylene	<lor ⊲.or</lor 	<lor< td=""><td>_</td></lor<>	_				
o-Xylene	<lor< td=""><td><lor< td=""><td></td></lor<></td></lor<>	<lor< td=""><td></td></lor<>					

BATCH	QUAEITY	CONT	RQI,	CONTRO	n: spike/	ovelac	ATĘ		
······	LS EP-07	6 : Poíy	nuclear A	vromatic H	ydrocarbo	วกร	<u></u>		*******
QC LOT No. :	NEP0765				ANALYST		WALL		
MATRIX:	Soils	Soils							
	8tank	Spike		SPIKE QC I	RESULTS		Cor	ilroi Li	mils
	Conc	Level	SCS	DCS	Average	(RPD)	R	ec.	RPE
COMPOUND			Rec.	Rec.	Rec.		ŀ		
	mg/kg	mg/kg		%	%	%	Low	High	%
EP-076A : Polynucioar	Aromatic H	ydrogar	lions						••
Naphihalone	<0.25	4.0	90.5	88.7	89.6	2.03	86.5	127	0 - 20
Acenaphthylene	<0.25	4.0	08.5	87	87.8	1,71	76.6	130	0 - 20
Acenaphthene	<0.25	4.0	95.3	92,5	93.9	2.98	88.5	128	8 - 20
Fluorence	<0.25	4,0	91.1	88.7	89.9	2.67	89	131	0 - 2
Phenanthrene	<0.25	4.0	92	85.9	89	6.86	88.7	120	0 • 20
Anthracene	<0.25	4.0	92.5	87	89.8	6.13	87.3	120	0 - 20
Fluoranthene	<0.25	4.0	90	88.4	89.2	1.79	88.6	126	0 - 20
Pyrene	<0.25	4.0	95.8	93.7	94.8	2.22	84.2	130	0 - 20
Senzo(a)anthracene	<0.25	4.0	89.5	85.1	87.3	5.04	80	135	0 - 20
Chrysene	<0.25	4.0	90.4	91	90.7	0.66	89.6	116	9 - 2t
Benzo(b)/luoranthene	<0.25	4.0	92.6	88.8	90.7	4.19	84.6	132	0 - 20
Benzo(k)fluoranihene	<0.25	4.0	94	94.7	94.4	0.74	86.6	118	0 - 20
Benzo(a)pyrene	<0.25	4.0	91.5	90.3	90.9	1.32	82	125	0 - 2(
Indeno(1.2.4.cd)pyrene	<0.25	4.0	87.9	86.8	67.4	1.26	58,4	138	0 - 20
Nbenzo(a.h)anthracene	<0.25	4.0	87.8	86.5	87,2	1.49	59.9	139	0 - 20
Benzo(g.h.l)perylene	<0.25	4.0	88.9	87.4	88.2	1.7	54.8	139	0-20
ER-0765 PAHISUrroga	tes		F. C. S. S.		<u>te se se se se se se se se se se se se se</u>	11973 11971 - S		S.E.	<u> </u>
2-Fluorobiphenyl	90.5%	4.0	93.2	92.9	93.1	0.32	74.8	126	0 - 26
Anlhracene-d10	117%	4.0	95.4	95.5	95.5	0.11	89.3	121	0 - 20
4-Torphonyi-di4	127%	4.0	110	107	109	2.70	91.9	125	0 - 20

COMMENTS:

1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)

2) The control limits on RPD (relative percent deviation) are fixed.

3) * : Recovery or RPD fails outside of the recommended control limits.

BATCH CUALITY CONTROL ... DUPLICATE

ALS EP-076 : Polynuclear Aromatic Hydrocarbons

QC LOT No. :	NEP076S-445
MATRIX	Soils
ANALYST:	THAIR WALL

		QC DUPLICA	TE RESULTS	RPD	
		ES31740	ES31740		
COMPOUND	LOR	1	10	RPD	Cont. Limit
	mg/kg	mg/kg	mg/kg	%	
EP-076A : Polynuclear Ar	omatic:Hydroc	arbons 🔬		0-4	
Naphthalene	0.25	<0.25	<0.25	n/a	
Acenaphthylene	0.25	<0.25	<0.25	n/a	
Acenaphthene	0.25	<0.25	<0.25	n/a	
Fluorene	0.25	<0.25	<0.25	n/a	
Plienanthrene	0.25	<0.25	<0.25	n/a	
Anthracene	0.25	<0.25	<0.25	n/a	
Fluoranthene	0.25	<0.25	<0,25	n/a	
Pyreao	0.25	<0.25	< 0.25	n/a	
Benzo(a)anthracene	0.25	<0.25	<0.25	n/a	
Chrysene	0.25	<0.25	<0,25	n/a	
Senzo(b)fluoranthene	0.25	<0.25	<0.25	n/a	
Senzo(k)/luoranthene	0.25	<0.25	<0.25	n/a	
Benzo(a)pyrene	0.25	<0.25	<0.25	n/a	
indena(1.2.4,cd)pyrene	0.25	<0.25	< 0.25	n/a	
Dibenzo(a.b)anthracene	0.25	<0.25	<0.25	ก/ล	
Benzo(g.h.i)penylene	0.25	<0.25	<0.25	n/a	
EP-076S : PAH Surrogate	STATE (Second		8009-8 Se. C/4	tel Parks &	
2-Fluorobiphenyi	1%	80.3%	95%	16.8	0 - 20
Antiwacene d10	1%	104%	110%	5.61	0 - 20
4-Terphonyl-d14	1%	96.9%	110%	12.7	0-20

Note: The permitted range for RPD (relativo percent deviation) is specified in ALS Mothod QWI-EN/38 and is dependent on the magnitudo of results in comparison to the loval of reporting:

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL DUPLICATE

ALS EP-076 : Polynuclear Aromatic Hydrocarbons

QC LOT No. : NEP076S-445 MATRIX : Soils ANALYST: THAIR WALL

28

QC DUPLICATE RESULTS RPD ES31740 ES31740 LOR COMPOUND RPD 3 3D Cont. Limit mg/kg mg/kg % mg/kg EP-076A : Polynuclear Aromatic Hydrocarbolis 0.25 <0.25 < 0.25 Naphthalene n/a 0.25 < 0.25 <0.25 n/a Acenaphäiylene Acenaphtheae 0.25< 0.25 <0.25 n/a 0.25 <0.25 <0.25 Eluarene n/a 0.25 <0.25 <0.25 Phenanthrene n/a Anthracene 0.25 <0.25 <0.25 n/a 0.25 < 0.25 <0.25 Fluoranthene n∕a 0.25 < 0.25 < 0.25 Pyreno n/a 0.25 < 0.25 <0.25 Henzo(a)anihracene n/a 0.25 Chrysene <0.25 <0.25 n/a 0.25 <0.25 <0.25 Senzo(b)fluorantheno n/a Benzo(k)fluoranthene 0.25 <0.25 < 0.25 n/a 0.25 <0.25 <0.25 Benzo(a)pyrene n/a Indeno(1.2.4.cd)pyrene 0.25 <0.25 <0.25 n/a 0.25 < 0.25 <0.25 Dibenzo(a.h)anthracene n/a 0.25 <0.25 <0.25 Benzo(g.h.f)perylene n/a <u> 65 (</u> - <u>1</u> EP-076S PAH Surrogates 22 1% 74.6% 2-Fluorobiphenyt 85.5% 13.6 0 - 20 1% 112% Anthracene-d10 105% 6.45 0 - 20 1% 4-Terphonyl-d14 93.2% 95.7% 2,65 0 - 20

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting;

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

BATCH	QUALITY	ONTRO	il	natrix s	PIKE/DUP	LICATE		
Al	LS EP-076 : F	olynuc	lear Aron	natic Hydi	rocarbons			
QC LOT No. :	NEP0768	076S-445 ANALYST :				THAIR V	WAL	
MAHRX:	Soils			Sampto ID:	D: ES3174		3-1	
	Sample	Spike		SPIKE QC	RESULTS	۰ <u>ـــــ</u>	Conf. Limit	
	Results	I.ovel	MS	MSD	Average	RPD	RPD	
COMPOUND			Rec.	Rec.	Rec.			
	mg/kg	mg/kg	%	%	%	%	%	
EP-076A : Polynuclear A	Aromatic Hydr	ocarbon	s			1.44 2.14		
Acenaphilhene	<0.25	10	103	98.9	101	4.06	0 - 35	
Pyrone	<0.25	10	80.2	79.7	80	0.625	0 - 35	
EP-076S : PAH Surrogat	tes.		1. 1. 1.		· . ·			
2-Floorabiphenyl	80.3%	4	105	113	109	7.34	0 - 35	
Anthracone-d10	104%	4	92.4	99.5	96	7.4	0 - 35	
4-Terphenyl-d 14	96.9%	1	99.7	97	98.4	2.75	0 - 35	

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COMMENTS:

1) The RPD control limits are fixed.

2) *: RPD falls outside the recommended control limit.

E12591/1-AE 4 February, 2002

APPENDIX E

QA/QC DATA VALIDATION REPORT



Coffey Geosciences Pty Ltd A.C.N. 056 335 516

Environmental Division **QA/QC DATA VALIDATION REPORT** Job No: E12591/1 ALS Batch: ES31740



- I. SAMPLE HANDLING
- 1. Were the sample holding times met?
- 2. Were the samples in proper custody between the field and reaching the laboratory?
- 3. Were the samples properly and adequately preserved? This includes keeping the samples chilled, where applicable.
- 4. Were the samples received by the laboratory in good condition?

Ÿcs No (Comment below) \checkmark 7 1

COMMENTS:

	₩₽₩₽₽₽₽ ₩₽₩₩₩₽₽₽₩₽₩₽₩₽₽₽₩₽₽₽₩₽₩₽₽₩₽₩₽₩₽₽₩₽	
	וחוות אורי חווויוווי ווור מבוח אור מאור מאור ווווויידי בחויווווייבי ב	

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±11:-1±		
IIFAINENE		
###### ##############################		I
1000000L200000L20L1		.0
2000000.0%	·	
Environmentes	6,1	-L
Sample handling was:	✓ Satisfactory	Unsatisfactory
	Partially Satisfactory	

A.C.N. 056 335 516

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Environmental Division QA/QC DATA VALIDATION REPORT Job No: E12591/1 ALS Batch: ES31740



- 1. Was a NATA registered laboratory used?
- 2. Did the laboratory perform the requested tests?
- 3. Were the laboratory methods adopted NATA endorsed?
- 4. Were the appropriate test procedures followed?
- 5. Were the reporting limits satisfactory?
- 6. Was the NATA Seal on the reports?
- 7. Were the reports signed by an authorised person?



Coffey III

COMMENTS:

Report:	Partially Satisfactory	
Precision/Accuracy of the Laboratory Report:	✓ Satisfactory	Unsatisfactory
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A.C.N. 056 335 516

Environmental Division QA/QC DATA VALIDATION REPORT Job No: E12591/1 ALS Batch: ES31740

III. FIELD QA/QC

1.		Number of Samples analysed	Soif: 29
			Water: 0
2.	-	Number of Days of Sampling:	Soil: 1
			Water: N/A
_			

Number and Type of QA/QC Samples Collected:

	SOIL	WATER
Field Duplicates	3	N/A
Trip Blanks	0	N/A
Wash Blanks	1	N/A
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	N/A

Yes

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No (Comment below)

4. FIELD DUPLICATES

- A. Were an Adequate Number of field duplicates collected?
- B. Were RPDs within Control Limits?
 - a. Organics (4 50%)
 - b. Metals/Inorganics (± 50%)

COMMENTS:

The RPDs for chromium (57%) and lead (67%) for the TP10/TP10A duplicate pair marginally exceeded the control limit of 50%. However taking into account that the concentrations of chromium and lead were less than five times the detection limit, this is not considered to affect the useability of the data.

The heavy metal RPDs were within control limits for the TP4/TP4A and TP8/TP8A duplicate pairs.

Coffey **EXE**

A.C.N. 056 335 516

Environmental Division QA/QC DATA VALIDATION REPORT Job No: E12591/1 ALS Batch: ES31740



No (Comment below)

HI. FIELD OA/OC (Continued)

- 5. TRIP BLANKS
- A. Were an Adequate Number of trip blanks collected?
- B. Were the Trip Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)

COMMENTS:

No trip blank was collected. However, as no BTEX or TPH C6-C9 was detected in the samples analysed, introduction of volatile organics was considered unlikely to have occurred.

No trip spike was collected. As samples were chilled when received by the laboratory and were analysed within holding times, opportunity for loss of volatiles is considered to be low.

WASH BLANKS

- A. Were an adequate number of Wash Blanks collected?
- B. Were the Wash Blanks free of contaminants?

(If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)

Yes	No
	(Comment below)
- · · ·	
	×

Yes

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COMMENTS:

Zinc was detected at a low concentration (2ug/L) in the wash blank. This may be the result of small quantities of lead contaminated soil remaining on the sampling equipment following decontamination. However, at this concentration, the likelihood of introduction of significant lead to a soil sample resulting from cross contamination is considered to be low.

The field QA/QC was:	✓ Satisfactory	Unsatisfactory
	Partially Satisfactory	* **

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IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

Type and Number of QA/QC Samples

	Metals	РАН	TPĤ	BTEX
Laboratory Blanks/Reagent Blanks	1	Į	£	I
Matrix Spikes/Matrix Spike Duplicates	1	2	1	ĺ.
Standard/Certified Reference Material Analysis	2	1	1	1
Laboratory Duplicates	4	2	0	0
Surrogates	0	18	11	11

Yes

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No (Comment below)

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- 2 Were the laboratory blanks/reagents blanks free of contamination?
- 3. Were the reference material / spike recoveries within control limits?
 - a. Organics (60% to 120%)
 - b. Metals/Inorganic (70% to 130%)
- 4. Were the RPDs of the laboratory duplicates within control fimits?
- 5. Were the surrogate recoveries within control limits?
- COMMENTS:



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COMMENTS:

DATA USABILITY

Data Directly Usable

Data Not Usable.

QA/QC Report Prepared by

QA/QC Report Reviewed by:

Coffey Geosciences Pty Ltd A.C.N. 056 335 516

Data Usable with the following qualification (see comment below)

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Environmental Division QA/QC DATA VALIDATION REPORT ALS 8atch: ES31740 Job No: E12591/1

Josiwa Lasky





Australia

Australian Capital Territory

- Canberra
 265 Canberra Avenue
 Fyshwick ACT 2609
 Telephone +61 2 6280 4732
 Facsimile +61 2 6280 6650
- Canberra Testing Services 265 Canberra Avenue Fysiawick ACT 2609 Telephone +61 2 6280 4261 Facsimile +61 2 6280 6650
- Canberra City Coffey MPW Pty Ltd
 Safte 2 Northbourno Chambers
 54 Northbourno Avenue
 Canberra City ACT 2601
 Telephone +61 2 6248 7366
 Facshuile +51 2 6248 7157

New South Walos

Albury
 151 Wytarza Drivo
 North Albury NSW 2640
 Telephone +61 2 6040 3847
 Facsimile +61 2 6040 3861

- Alstonville
 Unit 1/38 Kays Lane
 Bussellion Park
 Alstonville NSW 2477
 Telephone +61 2 6628 3224
 Facsimile +61 2 6628 3224
- Gosford 42 fills Street Gosford NSW 2250 Telephone +61 2 4323 3585 Facsimile +61 2 4323 6477
- Newcasta
 Mangrove Road
 Sandgate NSW 2304
 Telephone +61 2 4967 6377
 Facsimile +61 2 4967 5402
- Sydney
 142 Wicks Roads

North Ryde NSW 2113 Telephone +61 2 9888 7444 Facsimile +61 2 9888 9977

• Taree

Unit 1/4 Douglas Avenue Tencumy NSW 2428 Telephone +61 2 6555 8554 Facsimile +61 2 6555 7849

Woßongong
 Unit 1/222 Berkeley Road
 Unanderra NSW 2526
 Telephone +61 2 4272 6071
 Facsimile +61 2 4272 6075

- Ouecosland • Baisbano • 53B Fairtawn Skeet • Nathan QLD 4111 • Telephone +61 7 3274 4411 • Facsimile +61 7 3274 4977
- Maroochydore
 Unit 4/8 Kelly Coart
 Maroochydoro QLD 4558
 Telephoao +61 7 5443 5922
 Facsimile +61 7 5443 5895
- Townsville 1/46 Pilkington Street Garbutt QLD 4814 Telephone +61 7 4775 4500 Facsimite +61 7 4775 5497
- South Australia
- Adefaide
 14B Henley Beach Road
 Mile End SA 5031
 Telephone +61 8 8352 1744
 Facsimile +61 8 8234 0932
- Tasmania • Hobart 289-291 Everpool Street Hobart TAS 7000 Telephone +61 3 6234 9955 Facsimile +61 3 6234 9577
- Victoria
- Molbourne
 16 Church Street
 Hawthore VIC 3122
 Totophone +61 3 9853 3396
 Facsierile +61 3 9853 0189
- Western Australia
- Peath
 33 Walters Drive
 Herdsman WA 6017
 Telephone +61 8 9445 7888
 Facsimile + 61 8 9446 7999

Overseas

- Indonosia
 - Jakarta
 Level 12 Wisma Bank Ditannata
 JL Jenderal Sudiman Kay 28
 Jakarta 12910 Indonesia
 Telephone + 6221 523 9290
 Facsimile + 6221 523 9287

Malaysia

Kuala Lumpus
 50A Jalan USJ 10/18
 47600 UEP Subang Jaya
 Selangor Darul Ehsen
 Malaysia
 Telephone +60 3 732 4513
 Facsimile +60 3 732 4253

Philipplaes

- Maalla
 10th Floor Strata 100 Building Emerald Avenue, Pasig Metro Manila Philippinos
 Telephone +63 2 636 8287
 Facsimile +63 2 638 3542
- Hong Kong
- Hosg Kong Suite 2207-9, Tower Two, Lippo Centre 89 Queensway, Hong Kong Tetephone + 852 2530 8816
 Facstmile + 852 2530 8116

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